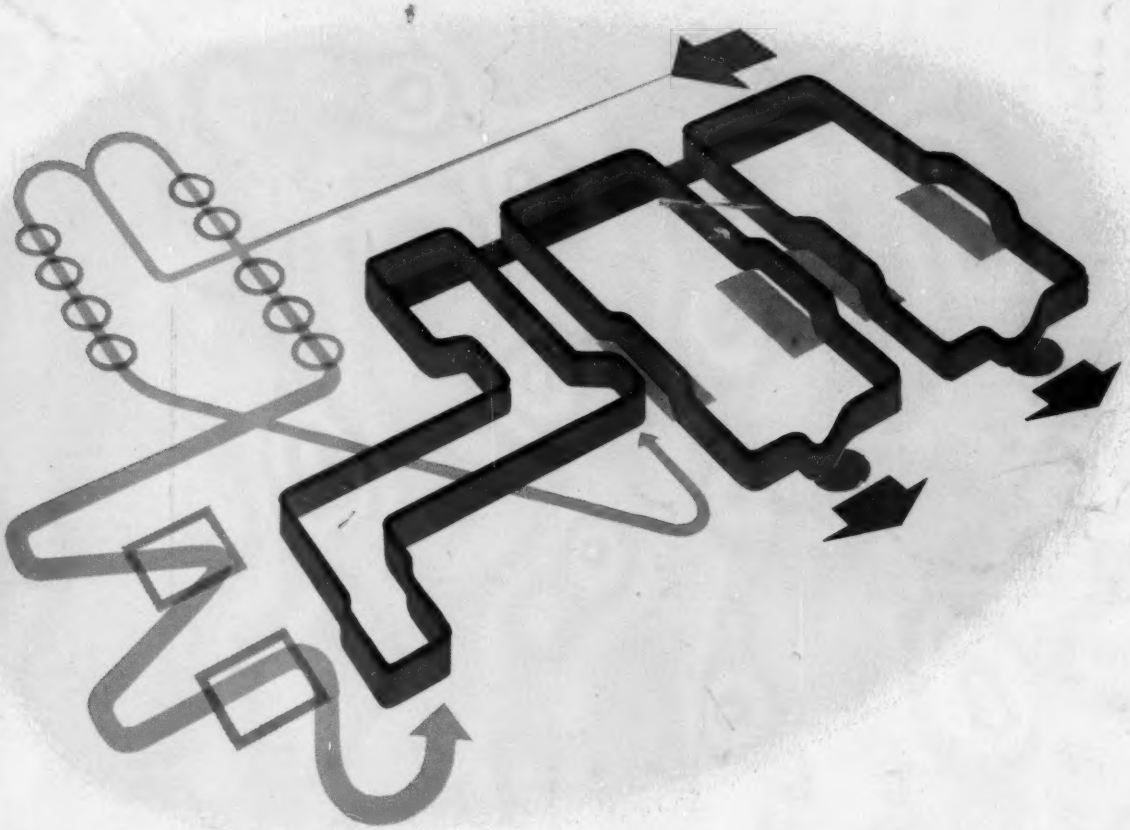
MATERIAL HANDLING

FLOW

PRODUCTION · AUTOMATION · PACKAGING · SHIPPING

JULY 1957

Cost Accounting in Shipping . . . Page 108



STEVENS RICE
UNIVERSITY MICROFILMS
313 N FIRST ST
ANN ARBOR MICH

Four-In-One Production Line

see page 59

. . . *The FIRST magazine in the material handling industry.*

● The preferred reading of more than 40,000 identified buyers of material handling, packaging and shipping equipment and supplies

AN INDUSTRIAL PUBLISHING CORPORATION MAGAZINE

FORGED STEEL FOR SURPLUS STRENGTH

NOELTING

Faultless CASTER

H 1600 HEAVY DUTY

EXCLUSIVE HORN CONSTRUCTION RESISTS SHOCKS, PROTECTS LOADS

For safe movement of tremendous loads on casters capable of resisting high impact shocks, yet swivel and roll with minimum effort, Faultless presents a materials-handling man's answer in the H1600 Forged Steel Caster.

Faultless design engineers drew on a background of more than fifty years experience with caster problems when they perfected an exclusive heavy duty horn design pronounced the most durable forged steel construction ever offered in a caster.

The cutaway illustration shows the large diameter raceway and large ball bearings that carry the load around machined hardened surfaces. A Timken combined radial and thrust bearing is nested in the horn top plate. Timken tapered roller bearings are also furnished in the Forged Steel and Semi-steel wheels.

If your movements of excessively heavy loads are encountering high impact shocks, your problem will be solved with this new H1600 Series Forged Steel Caster. Your nearby Faultless Industrial Distributor maintains a substantial inventory of Faultless Casters for immediate delivery. Call him today about this new H1600 Series Caster.

Exclusive with Faultless

For the most durable construction possible to make Faultless engineers machined the heavy drop forged horn top plate to form strong shoulders against which the heavy steel side members or legs are securely welded. The load strains are thus transferred from the welding bead to the top plate — the most durable forged steel construction made.

H 1600 SERIES HEAVY DUTY CASTER SHOWN WITH FORGED STEEL WHEEL

DESIGN FEATURES

1. HEAVY DROP FORGED CASTER TOP PLATE machined for load bearing balls.

2. HEAVY DROP FORGED HORN TOP PLATE machined for load and thrust bearing raceways.

3. SWIVEL HEAD consists of a complete row of hardened ball bearings operating in lubricated machined raceway and Timken combined radial and thrust bearing. Raceways case-hardened.

4. CASTER HORN LEGS made of heavy steel, deeply embossed and formed for additional strength. The embossing forms a shoulder to prevent axle from turning. NOTE: The forged top plate of the horn is machined to form a perfect shoulder against which the side members or legs of the horn are securely welded, thus transferring the strains from the welding bead to the top plate—the most durable forged steel construction made —an exclusive FAULTLESS feature.

5. ADJUSTABLE KING BOLT 1" in diameter, assembled with lock-nut and securely staked.

6. AXLE BOLT 1" in diameter. Bolt head held against horn embossing shoulder to prevent axle turning. Heavy duty lock nut is standard.

7. WHEEL—Forged steel wheel supplied in 6" size. Semi-steel wheel supplied in 8" size. Vulcanized rubber tread wheel supplied in 6" and 8" sizes. Roller bearing standard in all wheels. Timken tapered bearings can also be supplied in forged and semi-steel wheels.

8. GREASE FITTINGS easily accessible for fast, thorough lubrication of swivel head and wheel.

9. FINISH—lustre green lacquer.

FAULTLESS CASTER CORPORATION,

Offices in Atlanta, Baltimore, Boston, Buffalo, Chicago, Cleveland, Dallas, Detroit, Grand Rapids, High Point,

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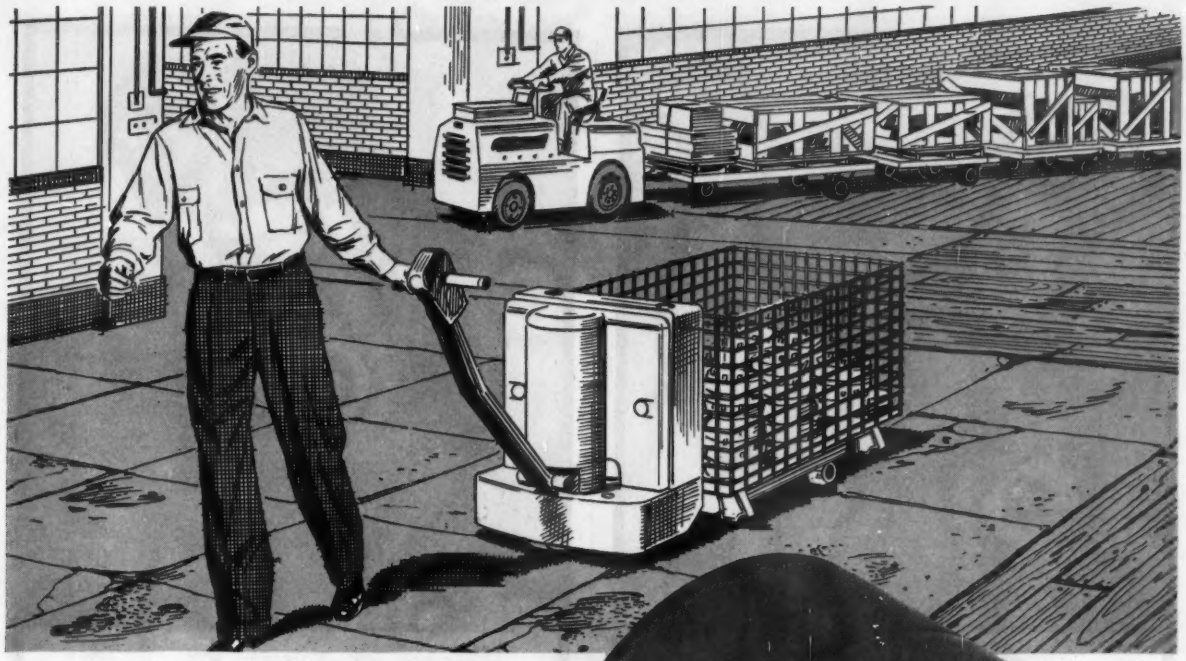

Easy on your floors

Easy on your budget

Molded-On Solid Industrial Wheels

IT'S probably no news to you that scuffed, worn-down tires can be awfully tough on floors.

That's where Goodyear Molded-On Industrial Solid Wheels come into the picture. With tread cured directly to a cast-iron wheel, tire and wheel become one unit.

Molded-On Wheels are resilient, roll easily, cushion loads and prevent floor damage. Result: reduction in load breakage and *substantial savings on floor and equipment.*

If you have an industrial tire problem, why not tell us about it? We'll be glad to make an on-the-scene investigation and suggest a solution. No obligation, of course. See your Goodyear dealer, or write:

Goodyear, Industrial Tire Sales
Akron 16, Ohio

Use the Right Tire for the Job—Buy and Specify

GOODYEAR
INDUSTRIAL TIRES

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for Materials...

The new model HA "PAYLOADER" tractor-shovel is so fast, flexible and efficient for loading and unloading boxcars that more and more industrial users of loose, dry materials get their shipments in bulk and realize substantial savings in freight rates and handling costs.

The "PAYLOADER" above is one of several at a pier transferring a shipload of China Clay into boxcars. This little "PAYLOADER" handles larger loads and delivers more tons per hour than heavier machines with bigger engines, yet has a smaller turning radius for better and faster maneuvering in and around boxcars.

The 40-degree tip-back of the bucket at ground level permits the operator to get and hold big loads close and low. The hydraulic load-shock-absorber, a standard equipment feature, makes it possible to carry and move more material with less spillage, faster, with better stability and greater safety.

For unloading or loading boxcars or stockpile work, this new HA "PAYLOADER" enables the same operator to handle from 50 to 100% more than with older-style machines according to actual user reports.

Your nearby "PAYLOADER" Distributor will be glad to demonstrate. The Frank G. Hough Co., 731 Sunnyside Ave., Libertyville, Ill.

97A

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

Circle 156 on Reader Service Card for more information

for Scrap...

One of the many special attachments available for the model HA "PAYLOADER" tractor-shovel, is the tine bucket being used here to scoop-up and load light-metal scrap at low cost. Special buckets are also available to handle other special materials.

Lift fork, crane hook and other useful attachments can also be provided. They mount quickly on, or interchange quickly with the regular bucket, to handle a variety of jobs and loads.

A floor-sweeping attachment is also available for the model HA. In fact, one is on hand at the location pictured, and sweeps aisles, runways and work areas at regular intervals. It mounts quickly on the front of the regular bucket, sweeps into it, and carries and dumps the sweepings wherever desired.

When the "PAYLOADER" can be kept completely busy during the day on regular bulk-handling operations, some users prefer to use the sweeper attachment "after hours" or during night shifts.

Other valuable off-shift or odd-job tasks for the model HA includes snow removal, using the regular bucket, a large snow bucket, or a snow plow attachment. The Frank G. Hough Co., 731 Sunnyside Ave., Libertyville, Ill.

97B

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SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

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for Batching...

One man on a model HA "PAYLOADER" tractor-shovel, feeding a scale or weighing hopper, measures out 10,000 pound batches within 5-pound accuracy at this vitreous china plant. Four to five trips do the job. While spilling the last bucket load into the scale hopper, the operator watches the dial scale and at the exact instant tilts back the bucket and stops the dumping.

Precise, one-lever control of the hydraulic bucket tilt of the model HA is one of the reasons why this versatile tractor-shovel is an essential part of this fast and accurate batching procedure. Another "PAYLOADER" feature, contributing to the success and efficiency of this operation, is the speed with which it shuttles between stockpile and scale hopper with full bucket loads of the raw material.

The model HA is the smallest of the complete "PAYLOADER" tractor-shovel line, with sizes ranging from 2,000 to 9,000 lb. carrying capacity and choice of engines for gasoline, diesel or LPG for most models. The nearby Distributor has full sales and service facilities. The Frank G. Hough Co., 731 Sunnyside Ave., Libertyville, Ill.

97C

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THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

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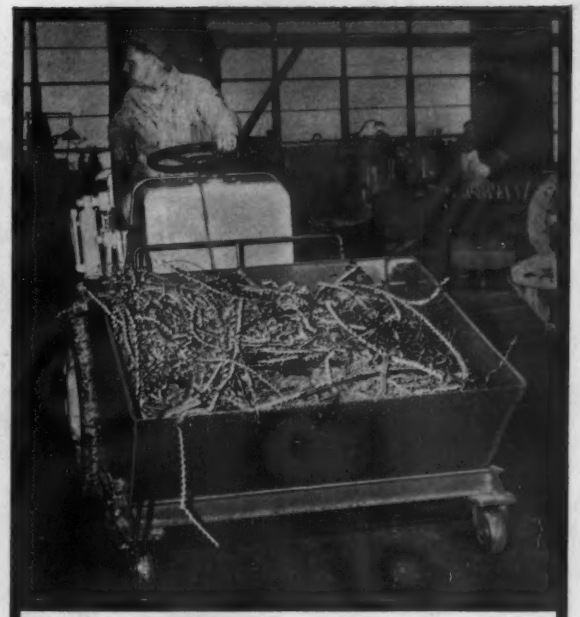

for Turnings...

A new and revolutionary use of the model HA "PAYLOADER" in metal-working shops has been created with the development of a detachable bucket called the "Payhopper". This special bucket on casters can be spotted at stamping presses, lathes, milling machines, screw machines, or at other convenient points to receive scrap or product.

The "PAYLOADER", fitted with a special bolster and quick-detachable coupling, latches on to the "Payhopper" and lifts, carries and dumps it wherever desired — can even dump the contents into bins or trucks.

One "PAYLOADER" can serve many such "Payhopper" units scattered throughout a plant. The four large casters on each "Payhopper" enables one man to push it easily, either empty or loaded, in or out of spots not directly accessible to the "PAYLOADER".

The model HA "PAYLOADER" readily negotiates 6 ft. aisles and travels at speeds up to 10 mph. Torque-converter drive is a standard feature that makes operation easy, insures smooth starts and "inching" control and almost entirely eliminates "clutching" and clutch maintenance. The Frank G. Hough Co., 731 Sunnyside Ave., Libertyville, Ill.

97D

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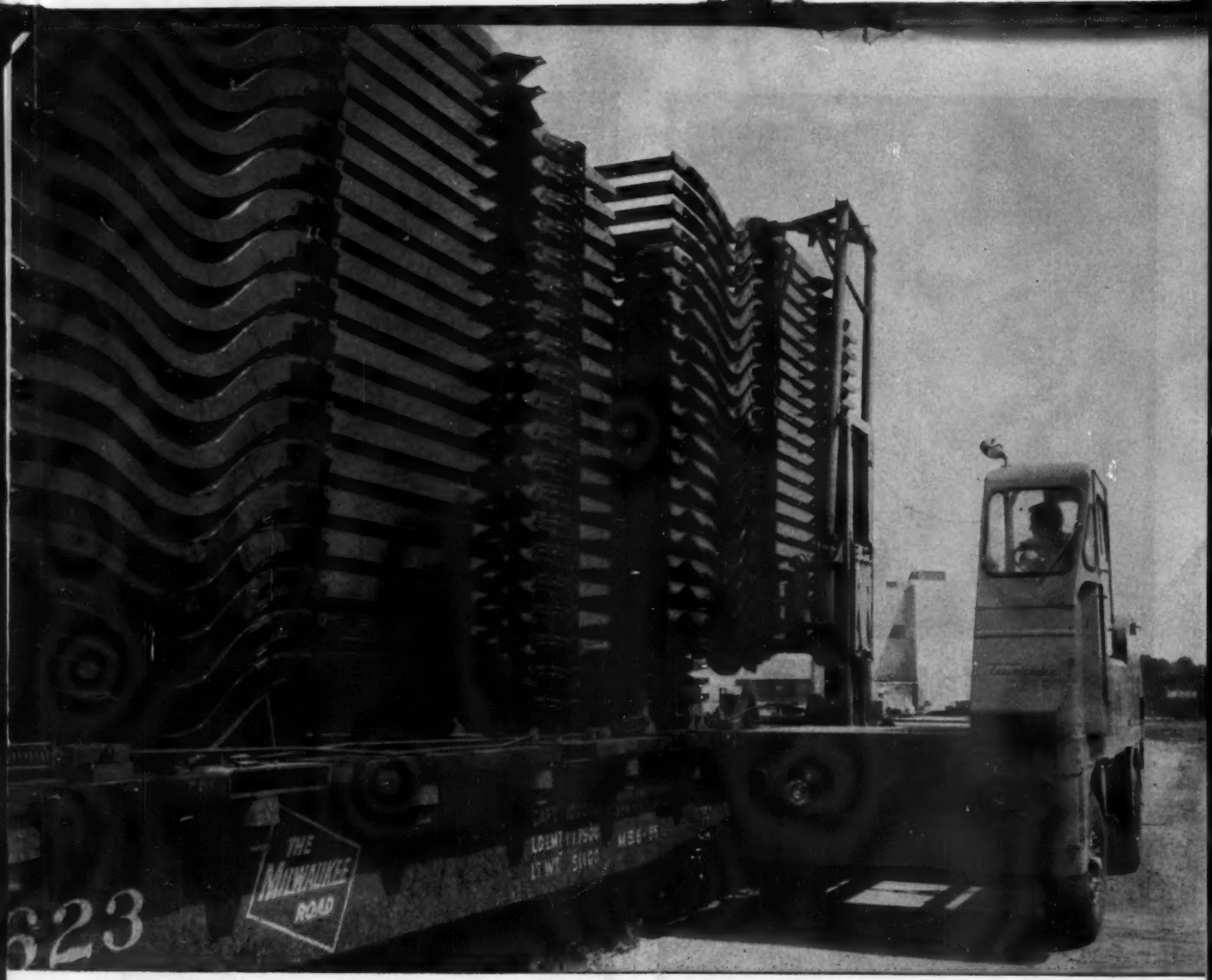

Traveloader ...unloads 8 cars per day ...former method 1 car per day!

Auto frames arrive at this assembly plant on flat cars—120 frames per car (6 stacks of 20 frames). Traveloader, the unique Baker side-loading fork truck, handling 20 frames at a time, unloads, transports and stacks them in the storage area at the rate of one car every 30 minutes. Thus 6 carloads—sometimes 8—are handled in less than a day with the Traveloader and one operator.

A former method, using a fork truck, required two men plus the truck and driver to do the job—and one carload per day was the limit of the crew. The capacity of the truck was 6 frames per load. Cars, waiting to be unloaded, piled up on the tracks and demurrage charges resulted.

Besides unloading the frames, the Traveloader has time for many other handling jobs. If you have a difficult handling problem involving big, awkward or long loads, let us help you solve it with Traveloader. Write for Bulletin 1360.

Baker
industrial trucks

THE BAKER-RAULANG COMPANY
1219 WEST 80th STREET • CLEVELAND 2, OHIO

A Subsidiary of Otis Elevator Company
Circle No. 13 on Reader Service Card for more information

Otis

JULY 1957
VOL. 12, NO. 10

FLOW

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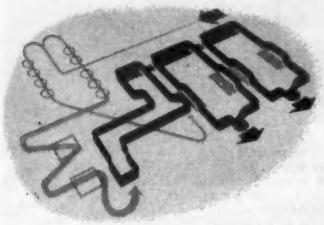

THE COVER

How to design an original flow system so that future production increases can be achieved with practically no added expense.

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FLOW'S MATERIAL HANDLING ILLUSTRATED
PRECISION METAL MOLDING
APPLIED HYDRAULICS
INDUSTRY AND WELDING
WELDING ILLUSTRATED
OCCUPATIONAL HAZARDS
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BPA

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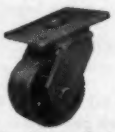
decision for today!

Sealed Bearing Casters for use in steam, water or chemically contaminated areas.

Heavy Duty
Rigid or Swivel
200 to 1500 lbs.

Medium Duty
300 to 400 lbs.

Pneumatic
220 to 340 lbs.



Extra Heavy Duty
700 to 6000 lbs.

"The answer...
right in front of my nose!"

PUT IT ON COLSON CASTERS! To insure smooth, safe movement of wheel mounted equipment . . . to obtain maximum economy, by all means consult a materials handling specialist who is thoroughly experienced in operations, weights and speed requirements on every combination of floor conditions.

For over 50 years, Colson's specialists have furnished correct set-ups for institutional, industrial and commercial establishments. They alone can specify from hundreds of types of light and heavy duty casters . . . they know by experience which caster is best for *the job*. All Colson casters are designed from selected materials that have been tested and proven in the field and precision built to give years of trouble-free operation.

Check your rolling equipment and floor conditions today . . . a Colson materials handling specialist is listed in the yellow pages of your phone book.

Materials handling equipment for plants... handling equipment for institutions

THE COLSON CORPORATION, Dept. F-7
General Offices, Elyria, Ohio
Factories in Elyria, Boston, Toronto

Our business is _____
Send materials handling information relative to our company. ☐
Have a representative call ☐

Name _____ Position _____
Firm _____
Address _____ City _____ State _____

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FLOW

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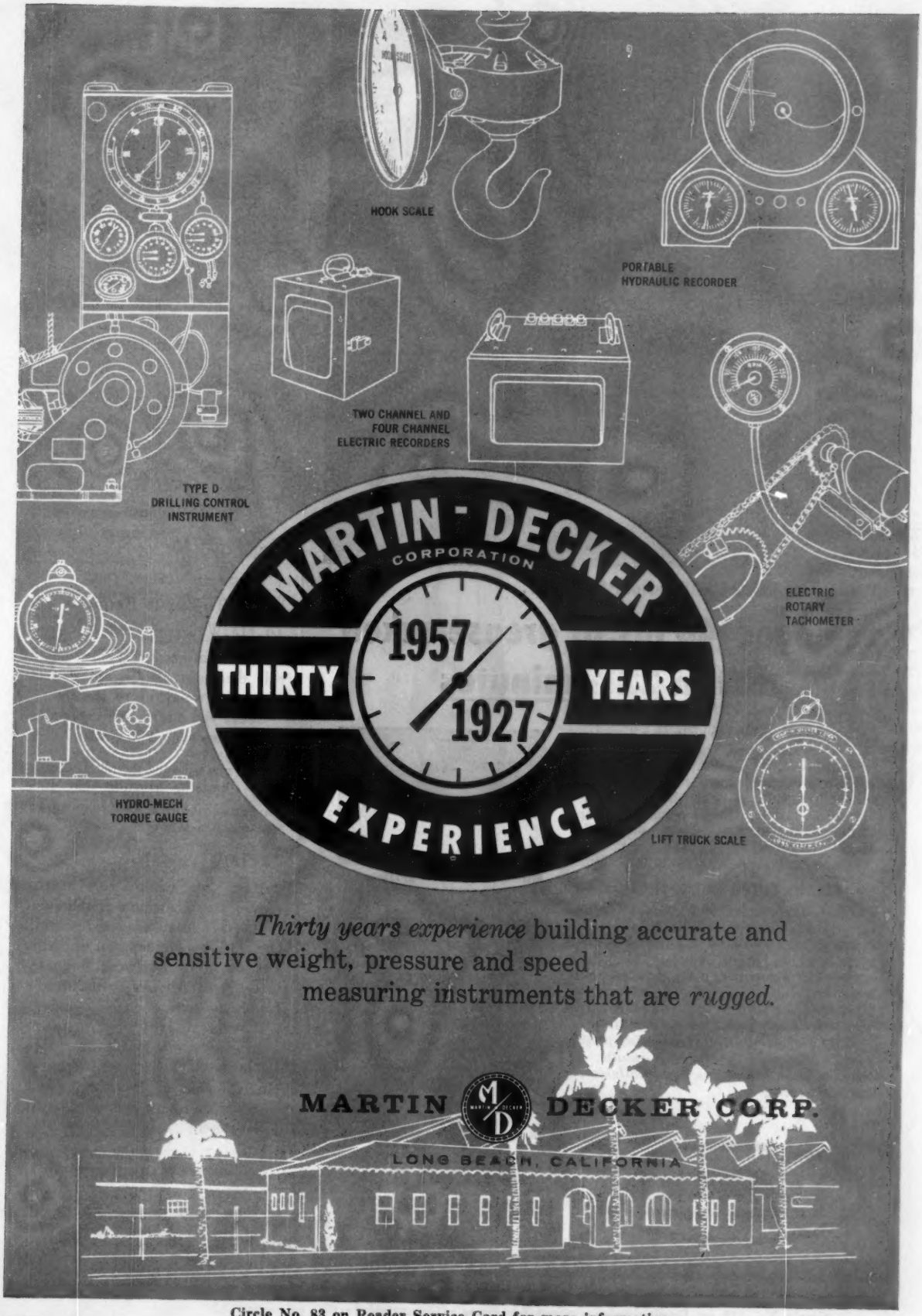

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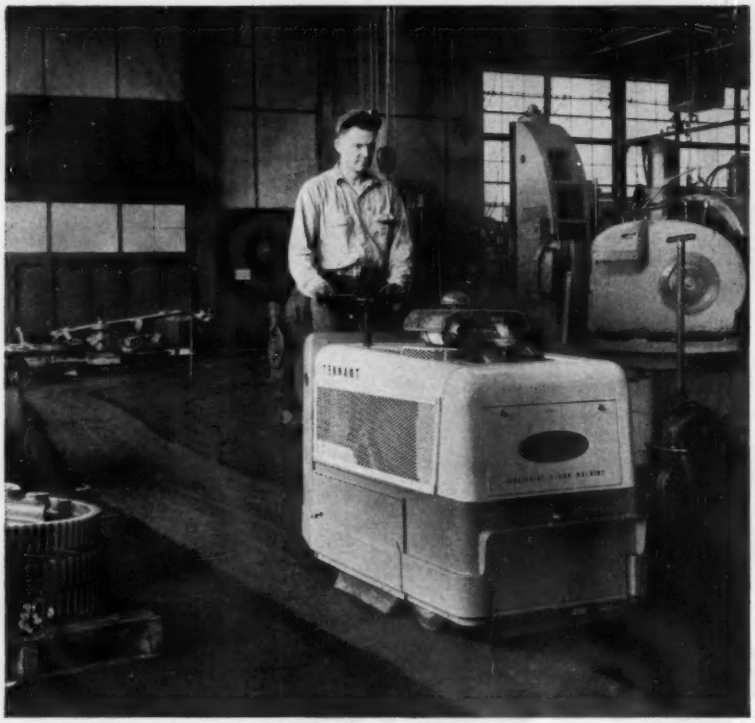

1 man, on a TENNANT "L" Floor Machine...

removes 140 lbs. of grease-caked dirt in 22½ minutes

As he rides down this aisle on a TENNANT "L" Floor Machine, this man is doing a job you'd think was "impossible."

With no effort except to steer and use simple hydraulic controls, he's cleaning a 21" path . . . smoothly shaving off bumpy traffic-packed dirt at the rate of 140 lbs. in 22½ minutes.

That's a *ton* in less than 5½ hours!

CLEANS FLOOR IN 1 OPERATION

You see the results at the right. In one operation the machine's 1600 rpm cleaning cylinder *pulverizes* hard-packed dirt—then picks it up.

Provides a superbly clean floor at a rate 6 men couldn't equal by hand—a hard, dry, good-trucking surface that wheels can grip without wasted power or lost traction.

WRITE for illustrated bulletin, photos, performance data, traction-test results, etc. Smaller walk-behind machine available for congested areas.

BEFORE: Dirt build-up 1/16" to 1/8" thick wastes power, grabs wheels. Truck needs 28-lb. pull to keep moving.

AFTER: Cleaned by Tennant "L", floor is smooth and dry. Lets truck move with 9-lb. pull—1/3 the effort needed before.

G. H. TENNANT COMPANY
707 N. Lilac Drive, Minneapolis 22, Minn.

TENNANT FLOOR MACHINES

SPECIALIZED MAINTENANCE EQUIPMENT

POWER SWEEPERS • FLOOR MACHINES • SCARIFIERS • ROOF SCRAPERS • CONCRETE ROUTERS

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LETTERS TO THE EDITORS

LP-Gas by Truck or Rail?

To FLOW:

We are greatly interested in the relative advantages of tank car vs. truck receipts of LP-Gas.

We would appreciate very much if you could furnish us with a reprint of this article, "What LP-Gas Supply Is Best for You . . . and how much will it cost?" appearing in the December 1956 issue of FLOW.

Galley J. Thibodeaux
The Celotex Corporation
Chicago, Illinois

Sent.

Where-To-Buy-It Requests

To FLOW:

We are in need of a sheet metal roll dispenser. Rolls are 4 feet wide, and weigh up to one ton.

Could you advise us of someone who makes such a dispenser?

A. J. Auble
Shadelite Marquee Co. Inc.
Ord, Nebraska

To FLOW:

I am writing to you in the capacity of chairman of the committee on automation, representing the National Association of Shirt, Pajama and Sportswear Manufacturers, as it applies to the needle trades industry.

Your name was given to me as a possible source of information in the field of Material Handling. Any information you may be able to forward to me will be greatly appreciated.

Walter Ewing
Production Manager
Wilson Brothers
Chicago 54, Illinois

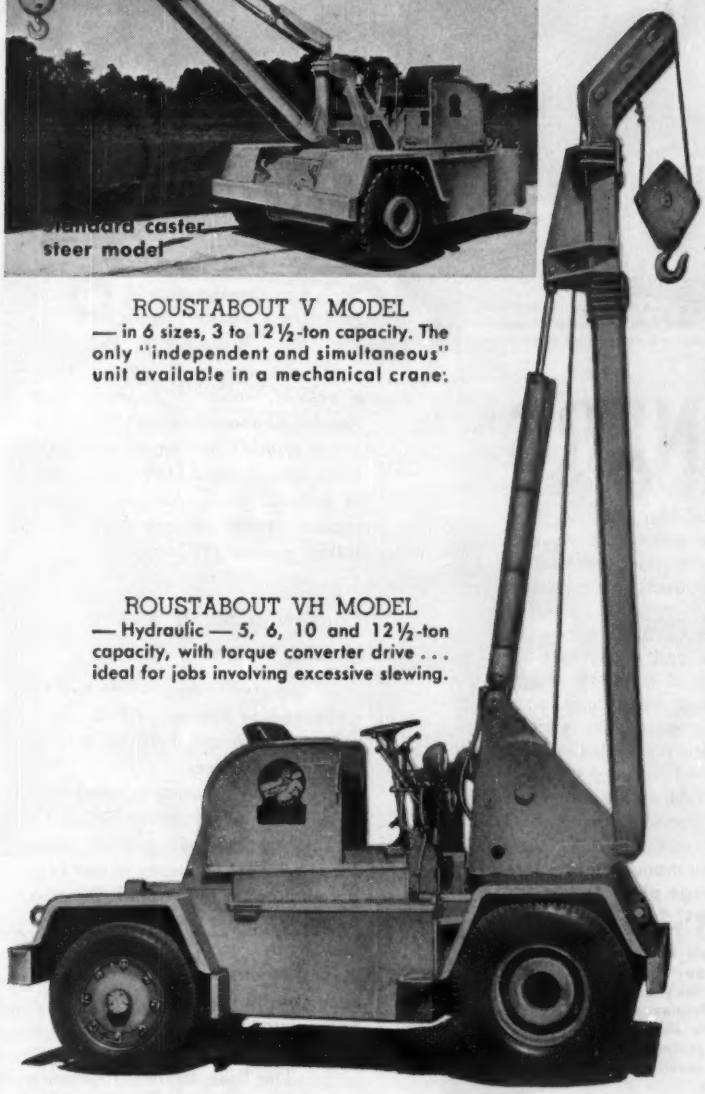
The best way to provide readers with the latest information on material handling (including auto-

DOWN GOES HANDLING COST

UP GOES PRODUCTION

ROUSTABOUT V MODEL
— in 6 sizes, 3 to 12½-ton capacity. The only "independent and simultaneous" unit available in a mechanical crane.

ROUSTABOUT VH MODEL
— Hydraulic — 5, 6, 10 and 12½-ton capacity, with torque converter drive . . . ideal for jobs involving excessive slewing.



Wide rear axle model

2 MODELS
-one-man operation

Latest Roustabouts outmaneuver, outproduce all others . . . offer new handling economies. You have to *see* and *operate* it to believe it! The Roustabout puts amazing materials-handling ability into the hands of any employee—with just a few minutes' practice. It so simply and so effectively combines complete control of all movements that the operator can hoist or lower load, raise or lower boom, slew left or right, and travel forward or reverse — independently or in any combination.

Versatility and extreme ease of operation are only *two* of the outstanding features of the Roustabout. Others include:

- — indestructible base structure
- — 4 speeds forward or reverse
- — reserve power to climb steep grades with full load
- — up or down power with winches which will not drop the load
- — all gears enclosed in oil
- — complete accessibility of all assemblies
- — tremendous braking power
- — friction clutches for all crane movements
- — available in either caster steer or wide rear axle design

Write for data and name of nearest distributor.

HUGHES-KEENAN CORPORATION, Delaware, Ohio

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THE
RIGHT
ANSWER
FOR LARGE PLANTS
OR SMALL

Another typical example of how Palletainers conserve floor space in busy produce warehouse.

USP PALLETAINERS

BEARING PLATE

HI LODE

WAREHOUSE

BULK LODE

Why pay a premium for wasted floor space when you can make it do double triple duty by simply storing, stacking or transporting your products or materials in USP Palletainers.

Palletainers are available in a wide range of sizes, types and styles to meet your needs. Engineered to handle light and fragile products, or heavy unit loads up to 6000 pounds each with perfect safety and full inventory visibility. They'll stack to the rafters and cut your shipping losses, too. And...when empty, they can be folded flat for space saving and lower return freight rates.

No matter what you manufacture—store or transport—in a large plant or small... You need Palletainers!

You can see for yourself how USP Palletainers will quickly pay for themselves in your plant. Ask for your own copy of the big, new Palletainer catalog today. It's profusely illustrated with interesting, money saving applications plus complete specifications and construction details.

USP
UNION STEEL
PRODUCTS CO.
ALBION, MICHIGAN

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LETTERS

Continued

mation), is through the regular monthly pages of FLOW. Accordingly, arrangements have been made so that Mr. Ewing may become a regular reader.

Can Anyone Help?

To FLOW:

We are interested in obtaining information regarding a numbered filing system for material handling information.

We understand that this filing system or code uses integers from 1 to 9 for main divisions. Number 1 would pertain to conveyors, number 2 to cranes, etc. The divisions would have further breakdowns by code numbers after the main division integer.

M. L. Croom
Engineering Service Division
E. I. du Pont de Nemours & Co.
Wilmington, Delaware

We are unable to identify such a system, however it seems that Reader Croom shouldn't have too much trouble setting it up—possibly using the FLOW Directory as a basic guide. Suggestions are invited from readers who have solved similar problems.

Conveying Small Tickets

To FLOW:

It has been suggested that I write you in regard to locating a resource who can help us with a conveyor problem.

We wish to convey a small lay-by ticket approximately ¾" x 3" of fairly heavy paper stock from seven window locations in our lay-by counter on the seventh floor to a central point overhead on the eight floor.

Any recommendations or assistance you may offer will be greatly appreciated.

Kenneth G. Barron
The Rike Kumler Company
Dayton, Ohio

Reader Barron has been referred to a number of conveyor manufacturers who could solve his problem. However, we would be happy to hear from any readers who have solved similar problems.

...how else could you move $\frac{1}{4}$ billion feet so well?

Producing 12 million board feet of lumber plus 7½ million feet of plywood monthly, this Roseburg, Oregon mill operation is a bit too big to be typical. But they solved their problem of handling the tremendous output in a way that *is* typical of many mills and yards today.

To move more than ¼-billion feet annually through all phases of operation from receiving to delivery they standardized on Gerlinger material carriers. And bought high-stacking Gerlinger fork lift trucks to "feed" them.

Features like these made their choice of 7 Gerlinger carriers a wise investment:

- Superior cab-to-road visibility
- 4-Speed synchromesh transmission
- All-welded structural steel frame
- Smooth-riding helical coil springs
- 4-wheel power-assist brakes
- Reserve-power overhead valve engine
- Choice of 6- to 30-ton capacities

Get more detailed information from Gerlinger Carrier Co., Dallas, Oregon.

Leaders for 38 years in building Fork Lift Trucks and Carriers

TOWMOTOR - GERLINGER
THE ONE-MAN-GANG

Gerlinger Carrier Company, Dallas, Oregon, is a subsidiary of Towmotor Corporation, Cleveland, Ohio

Circle No. 123 on Reader Service Card for more information

WAYNE

saves 87% sweeping time —at Hinde & Dauch

"Wayne sweeps faster, better, gives floors a polished look," says Hugh McGowan, Production Control Supervisor of Hinde & Dauch's 165,000 sq. ft. Detroit corrugated container plant. Wayne sweeps in four hours what formerly took 32 hours to do with hand brooms, saving 28 man hours *per week!* . . . and WAYNE does it better!

ask for a demonstration in your plant

"FILTER-VAC" Dust Control
No dust bag to empty.

VACUUM ATTACHMENT for cleaning bins, equipment, etc.

300% GREATER, EFFECTIVE CAPACITY with hydraulic dumping at rear of sweeper.

No other sweeper cleans so thoroughly, so quickly, so completely dust-free. That's because the Wayne—and only the Wayne—is patterned on engineering principles with 10 years *proved* performance on large street sweepers used to keep America's leading cities clean.

No other power sweeper is so maneuverable, so easy to operate. No other sweeps so close to machinery and equipment. No other sweeps so clean.

If you take pride in a "dinner table clean" plant and want better looking floors, dust-free shelves and machinery, spic and span outside housekeeping, you'll want to see what the Wayne Sweeper can do for YOU! Ask for a demonstration. Fill-in coupon below, now.

ADVANCED FEATURES OF WAYNE SWEEPERS

1. More effective hopper capacity . . . 2. More efficient dust control, no dust bag to empty . . . 3. More horsepower . . . 4. Longer brush life . . . 5. More maneuverable . . . 6. 3-speed transmission.

WAYNE MANUFACTURING COMPANY
1312 East Lexington Ave., Pomona, Calif.

☐ Please arrange to demonstrate a Wayne Sweeper.
☐ Please send me literature.

Name_____
Title_____
Company_____
City_____ Zone____ State_____

World's Largest Producer of Power Sweepers for Cities and Industry

Circle No. 147 on Reader Service Card for more information

NEWS *from the* SALES FIELD

Two executive promotions in the **Industrial Truck Division** of **Clark Equipment Company** have been announced by **Robert H. Davies**, vice president. **L. A. DePolis** assumes the new position of director of sales. His former title was gen-

L. A. DePolis

B. E. Phillips

eral sales manager. **Bert E. Phillips** becomes sales manager. He was previously assistant sales manager. DePolis will have responsibility for all phases of the marketing function. He was named general sales manager of the division in 1954, after being assistant to the vice president. Phillips has been with Clark for ten years, as a distributor salesman, staff salesman, and northeastern district manager. He was named assistant sales manager in 1955.

Fort Worth Steel & Machinery Company has appointed the following three firms as distributors of "Fort Worth" mechanical power-transmission equipment and material handling machinery: **Reliable Bearing & Supply Company** of San Bernardino and Pomona, Calif., distributing "Fort Worth Beeline" screw conveyors and accessories. **George M. Philpott Company** of Fresno, Calif., distributing "Fort Worth" V-belt sheaves, roller-chain sprockets, elevator buckets, industrial exhaust fans, and screw conveyors and accessories. **Associated Bearings**

QUICK! *"Call the Deluxe Dealer— we have a shelving problem!"*

This poor fellow hasn't a place for everything and everything in its place. Matter of fact, there seems to be a place for nothing. Your shelving problems can't possibly be this preposterous, but if you want to talk about them with an expert call your Deluxe Steel Shelving dealer. He's nearby, ready to give you on-the-spot shelving layout service. He will engineer efficient, flexible shelving installations and supply you with additional shelving racks as fast as you need them. Deluxe dealers are backed by the finest designed and sturdiest built shelving.

These Deluxe features allow you to install Deluxe shelving at lowest cost.

1. One-piece bin type uprights—for greater rigidity, faster erection.
2. Boltless adjustable shelf brackets—complete adjustability without tools.
3. Snap-in dividers—for quick flexibility.
4. Factory-embedded shelf reinforcing—to cut down installation time
5. Coped shelf corners increase storage capacity.

DELUXE
STEEL SHELVING

DELUXE METAL FURNITURE COMPANY · WARREN, PA.
A Division of the Royal Metal Manufacturing Company

Look for your Deluxe dealer under *Shelving* in the yellow pages of your telephone directory or write to the factory for the name of the dealer nearest you and the colorful "Shelving Reference Manual."

Circle No. 45 on Reader Service Card for more information

New Edison Active Material
provides greater durability and life

Here's important news for battery users who want all the durability and service life it's possible to get from a battery. EDISON storage batteries—the longest-lived, most rugged batteries ever made—now incorporate a new active material that offers even longer life expectancy.

New economies in all types of service

The result of years of extensive Edison research and testing—this new active material is ready to help you get more dependable service than ever from EDISON batteries. Batteries with this new active material have proved they can cut battery costs appreciably in the face of increasing work demands. And the batteries used in these tests are still going strong, breaking their own records every day.

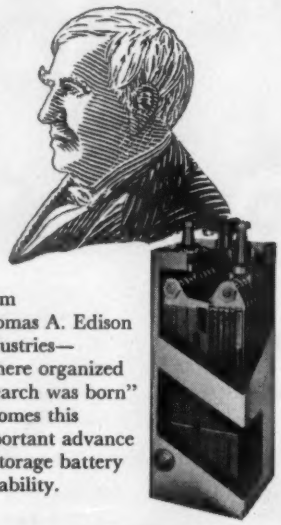
Take on-the-job abuse

For proof of durability, batteries with the new active material were tested side-by-side with standard EDISON long-life batteries under the most severe operating conditions. In steel mills, railroads, and metal fabricating plants, in mines and automotive plants, in manufacturing industries of all types—batteries with the new Edison active material showed improved performance and longer life.

New active material developed

Key to the new durability of EDISON storage batteries is a new active material developed by Edison Research to increase battery economy and life. This new material is the outcome of a long-term search for an active material that could take severe electrical abuse. With this new active material, EDISON batteries now offer you even greater dependability, life, and economy.

FOR COMPLETE INFORMATION on batteries incorporating this new development, call your Edison representative, or write: Edison Storage Battery Division, Thomas A. Edison Industries, West Orange, N. J.



From Thomas A. Edison Industries—"where organized research was born"—comes this important advance in storage battery durability.

Thomas A Edison

—THE NAME YOU CAN TRUST

Edison NICKEL–IRON –ALKALINE Storage Batteries

. . . a product of Thomas A. Edison Industries of McGRAW EDISON

Circle No. 161 on Reader Service Card for more information

Company of Kansas City, Mo., distributing "Fort Worth" sheaves.

J. L. Baldrige

Lamson Mobilift Corporation has announced the transfer of **John L. Baldrige** to district manager of the southern region, with headquarters in Atlanta, Georgia. His duties will include the co-ordination of all sales and service. Previously Baldridge was district manager of the company's office in Dallas, Texas.

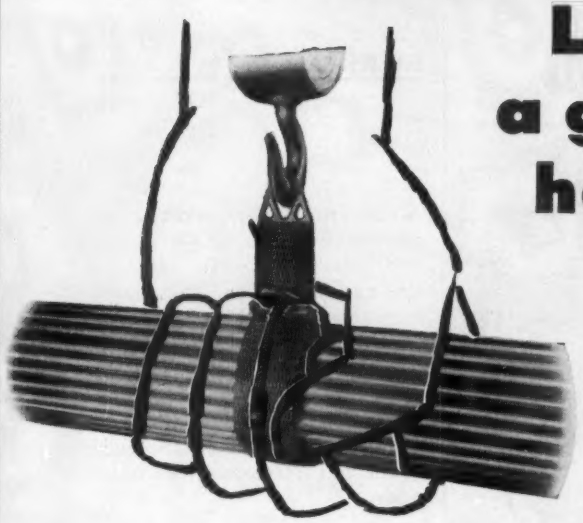
M. Van Dusen

Marvin Van Dusen has been named to the new position of sales coordinator of the **Powrworker Section** of the **Industrial Truck Division, Clark Equipment Company.** Van Dusen will process and coordinate sales orders and service requests from the field sales force with production and service schedules at the factory. He has been with Clark for five years as assistant to the plant superintendent and production supervisor for Powrworker products.

V. M. Holloway

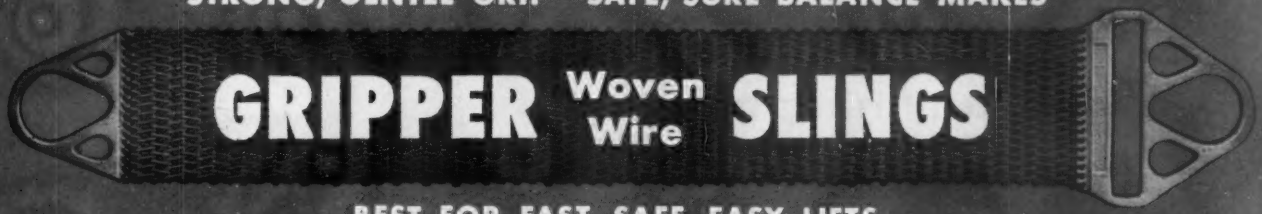
Expansion of the sales department, **Construction Machinery Division, Allis-Chalmers Mfg. Company,** by the creation of a new department within sales is announced by the company. **V. M. Holloway,** assistant sales manager of the division,

Like a giant hand...



STRONG, GENTLE GRIP—SAFE, SURE BALANCE MAKES

GRIPPER Woven Wire SLINGS



BEST FOR FAST, SAFE, EASY LIFTS

Safer than wire rope, gentle as canvas, flexible as manila . . . that's only a part of the story of the Gripper Sling—the ultimate in versatile materials handling tools. Like a giant hand, Gripper Slings grasp and hold the load in a strong, gentle grip when used in a choke hitch . . . safely and gently cradle it on a broad, flat surface in a basket hitch.

Whatever the size or shape of the load you handle—rounds, flats, hexes or squares—Gripper Slings can reduce load damage in production or shipping, provide greater safety for load and operator, cut rigging and unhitching time and eliminate the need for two-legged slings. Here's how—

NO LOAD DAMAGE—The unique woven wire construction of Gripper Slings consists of a series of smooth, spiral wires joined together across the body of the sling. This gives the sling complete flexibility, enabling it to bend easily around even irregularly shaped loads and eliminating the danger of gouging or marring edges of the load members. For turned or ground surfaces, PVC or Neoprene covered slings assure extremely delicate handling.

SAFE—The wide bearing surface of the Gripper Sling provides better load balance and gripping power . . . less crushing effect when handling hollow tubing or similar parts. Its instant gripping action means there's no slipping or shifting when load is applied. All metal construction means there's no core to rot, nothing to tear suddenly. Gripper slings will not whip, kink or tangle, and there are no loose strands to snag load or operator. As for rigging and hitching, a single man can easily do the job.

STRONG—Thousands of spiral wire loops in a transverse construction give Gripper Slings exceptionally long life. Should a single wire break, the slack is absorbed by the rest of the sling. Gripper Slings are pretested and guaranteed to meet load specifications. Standard lengths and widths with capacities up to 100,000 lbs. are available. Special sizes and corrosion resistant alloys available on request.

GRIPPER SLINGS ARE SOLD THROUGH—

Materials Handling, Safety Equipment and Mill Supply Distributors—Call your nearest distributor for full data or write direct for free catalog, price list and name of nearest distributor.

The Cambridge Wire Cloth Company

WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

Department W
Cambridge 7,
Maryland

DISTRIBUTORS—a few territories are still available. Get in touch with us today for details on this sensational materials handling tool, available only from the Cambridge Wire Cloth Company.

THE CAMBRIDGE WIRE CLOTH COMPANY
Cambridge, Maryland

Please send me more information about Gripper Slings and name of your distributor nearest me.

Name_____ **Title**_____

Company_____

Street_____

City_____ **Zone**____ **State**_____

Circle No. 29 on Reader Service Card for more information

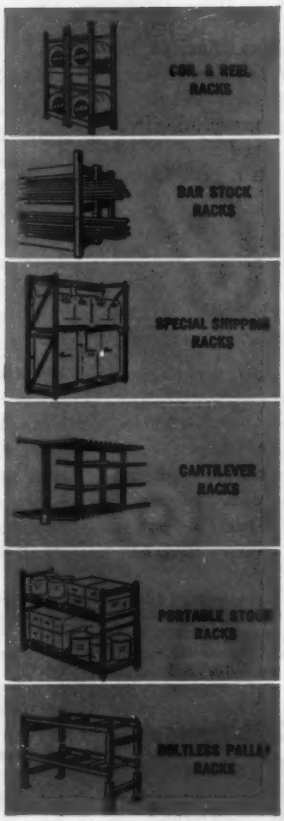
Stacking Problem? call EMI

anything can be "well stacked" or shipped on EMI racks

Big or little, strong or fragile, *anything* stacks or ships better on EMI quality racks. They protect stock, cut handling costs and speed inventory.

EMI RACKS are made of strong, tubular steel and are adjustable to fit any space or unit load. Special racks designed to your specifications with field engineering service on any installation.

Write for our illustrated catalog before you plan additional storage space or the purchase of stacking or shipping equipment.



Well Stacked Racks for Industry

EQUIPMENT MFG. INC.

21550 HOOVER ROAD DETROIT 5, MICHIGAN

Circle No. 52 on Reader Service Card for more information

is promoted to head up this department, which will devote its full time to growth development of dealers and their sales organization. **J. M. Haile,** who has been eastern territory manager of the division, is promoted to assistant sales manager to take over the duties of Holloway. **K. A. New** succeeds Haile as eastern territory manager.

J. M. Nestor

James M. Nestor has been appointed general sales manager of **Bostitch, Inc.,** stapling equipment manufacturers, it is announced by **Emmet G. Gardner,** president. Nestor joined Bostitch as a salesman in 1946, later going into the field as a supervisor.

W. Collet

Wallace Collett is appointed product sales manager, **Material Handling Department, Tractor Group, Allis-Chalmers Manufacturing Co.** Until now he was associated with the Tractor Group's sales training section at the home office in Milwaukee. Collett joined Allis-Chalmers in 1950 as a material handling engineer for the Buda Company.

E. Ray Draheim has been named assistant sales service manager at **Faultless Caster Corporation.** He has been an employee for approximately ten years, most recently as sales service representative. He also helds positions in the department and completed the firm's plant and sales training program.

A single truck with dual performance

Now for the first time, a single truck meets any terrain condition. On paved surfaces, the *Clarklift* CY 40, with *single standard tires*, is fast and maneuverable. Now change to *dual wide-profile tires*. This *same* truck now operates over mud or rough terrain with powerful traction, high stability and flotation.

As standard equipment, there's fingertip-control power shifting, and a creeper range for rough ground and steep grades. Power steering insures matchless handling ease. Even weight distribution means positive traction and gradeability.

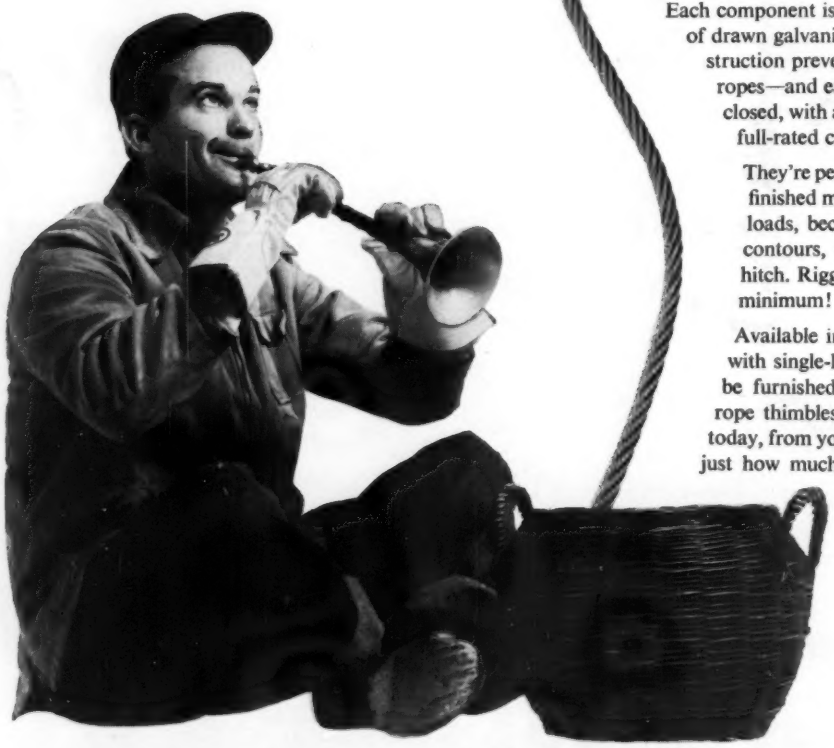
This new 4000-lb *Clarklift* sets a new pace, regardless of conditions. Try a demonstration on your own property. Your Clark dealer will arrange it. He's listed in the Yellow Pages.

Industrial Truck Division
Clark Equipment Company
Battle Creek, Michigan

CLARK EQUIPMENT

CLARKLIFT is a trademark of Clark Equipment Company

NEW ROEGAL CABLE-LAID SLINGS REALLY BEHAVE!



Handle like hemp—yet all-steel strong!
Highest flexibility, do not kink!

At last—a sling that won't snap back at you! That's because all the crankiness has been "trained out" of these remarkable new Roebling Roegal Cable-Laid Slings. No *extra-flexible* sling is stronger . . . or has greater resistance to shock and impact loads.

Each component is a strong, bright wire rope of drawn galvanized wire. Special flexible construction prevents shearing between the seven ropes—and each sling is all steel and machine-closed, with a tapered sleeve splice that assures full-rated capacity.

They're perfect, if you're handling pipe, tubing, finished machined parts and irregularly shaped loads, because they adapt themselves to load contours, and snug down easily in a choker hitch. Rigging and handling time is cut to a minimum!

Available in a variety of sizes, as chokers, or with single-leg or multi-leg construction. Can be furnished with loops, and standard wire rope thimbles, hooks and shackles. Find out today, from your nearest Roebling sales office, just how much of a lift new Roegal Cable-Laid Slings can give you.

ROEBLING

Subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J., BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 2340 GLENDALE-MILFORD RD., EVENDALE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. PHILADELPHIA, 230 VINE ST. • ST. LOUIS, 5988 MINERVA AVE. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK

Circle No. 108 on Reader Service Card for more information

Like having four trucks instead of one

There are four combinations of same-size drive and steer tires that make this *Clarklift* CY 40 the most versatile truck you can buy. Think of it—it's like having four trucks instead of one. Each set of tires fits a different job.

Dual wide-profile tires (shown above) at 30 pounds pressure give extra traction. *Single wide-profile tires* apply when overall machine width is limited. *Dual standard* and *single standard* tires apply on firmer surfaces.

Each tire combination mounts without machine modifications, thus change-outs are readily made according to the job. Clark alone offers the new high flotation wide-profile tires as standard equipment. Ask your Clark dealer about them and the new *Clarklift* CY 40, the truck that's really four trucks in one.

Industrial Truck Division
Clark Equipment Company
Battle Creek 13, Michigan

Clarklift is a trademark of Clark Equipment Company

CLARK EQUIPMENT

Circle No. 34 on Reader Service Card for more information

Ask Standard

how to cut costs with conveyors

Standard limit-switch-controlled Automatic Reciprocator is one of two used to form 200-ft. overhead detour of dehumidifier assembly line.

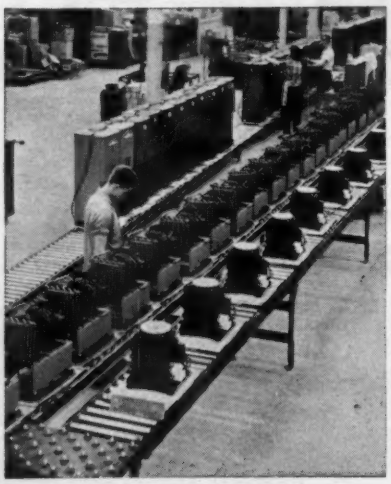
"COMPLETE CONVEYORIZING" . . . what it did in a smaller plant

Products at Ebco stay on conveyors until packaged and sent to shipping.

Ebco Manufacturing Company — employing 275 people to produce water coolers, beverage dispensers and dehumidifiers — has realized substantial savings by completely conveyorizing their operations. Ebco engineers planned for an orderly conveyor system when developing plant layout and building design; consequently conveyor system costs were kept "low" and resulting efficiency is "excellent."

Similarly, it will pay you to take another close look at your present conveyor system. Standard specialists will be pleased to help you make evaluations . . . recommend the proper equipment and its application to meet your specific needs.

STANDARD CONVEYOR COMPANY, North St. Paul 9, Minnesota. Sales and Service in Principal Cities.



Gravity roller conveyors like this, used for Ebco's assembly lines, are inexpensive, easy to set up, and economical to maintain.

For details on Standard Conveyors of all types, contact the Standard representative listed in your classified phone book or write direct. Ask for Bulletin A-7.

Circle No. 114 on Reader Service Card for more information

CALENDAR OF EVENTS

July 15-19

American Management Association—
Spring Packaging Clinic
Colgate University
Hamilton, N. Y.

September 9-13

The Instrument Society of America
12th Annual Instrument-Automation
Conference & Exhibit
Cleveland Auditorium
Cleveland, Ohio

September 30-October 4

Canadian National Material Handling
Show and Conference
Show Mart
Montreal, P. Q.

October 1-3

Third Joint Military-Industry Packaging and Material Handling Symposium
Fort Lee, Virginia

October 7-9

Illinois Institute of Technology—13th
Annual National Electronics Conference
Hotel Sherman
Chicago, Illinois

October 17-18

Fibre Box Association
Fibre Box Competition
Washington, D. C.

October 28-31

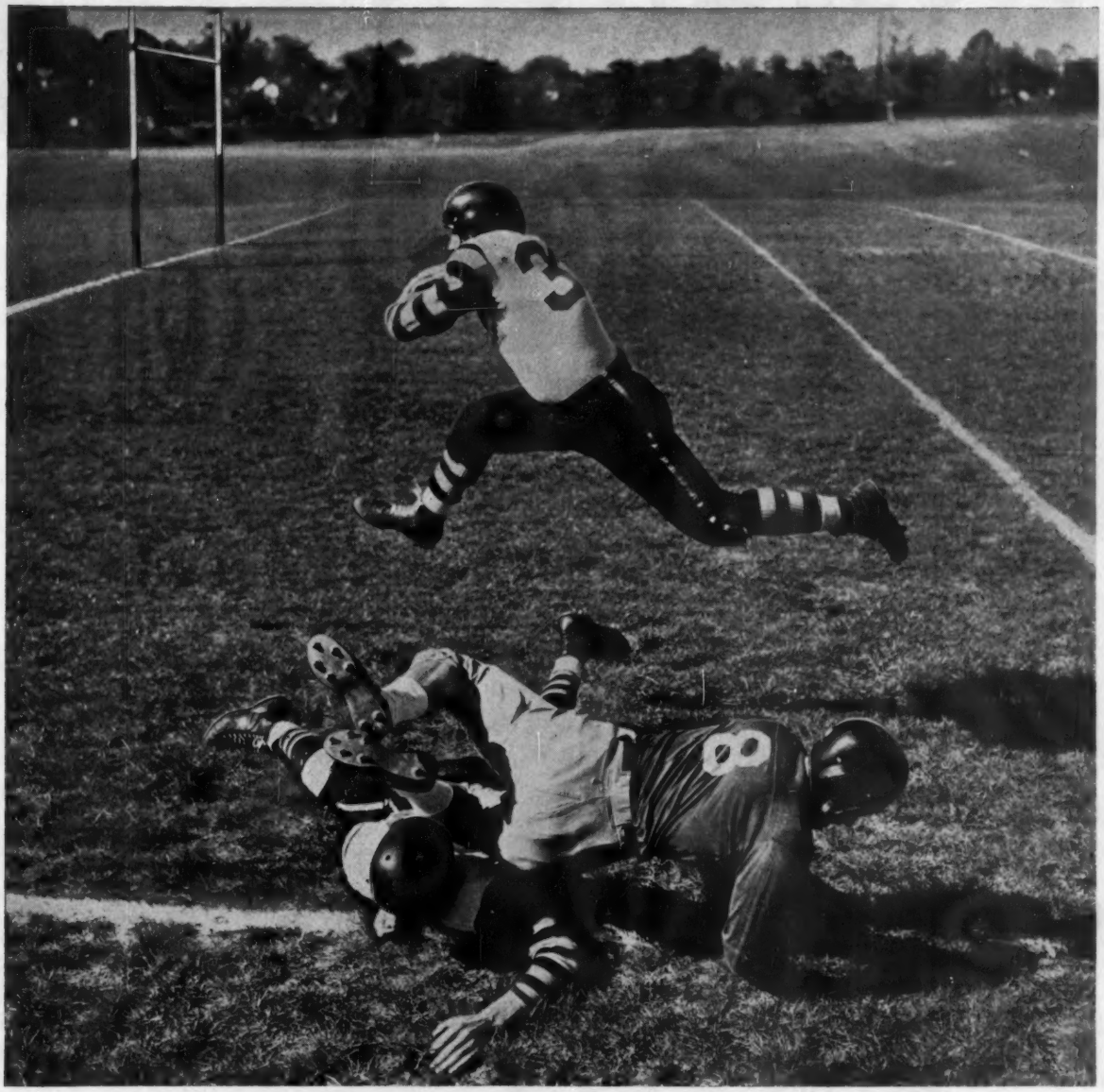
National Industrial Packaging &
Handling Exposition of 1957
Convention Hall
Atlantic City, New Jersey

November 4-7

National Retail Lumber
Dealers Association
Building Products Exposition
Philadelphia, Pennsylvania

November 6-8

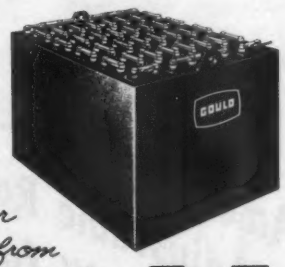
Packaging Association of Canada
Canadian National Packaging
Exposition
Toronto, Canada



Gould Teamwork Scores for Battery Users:

Making sure that you get maximum service from your batteries is the full time job of Gould field engineers. They help set up your battery maintenance shop, help establish good preventive maintenance procedures, make routine calls to check up on conditions and instruct your new personnel in correct maintenance procedures. This teamwork costs you nothing . . . as a matter of fact, it can't help but *save* you money. Why not take advantage of it? See your local Gould representative; or write Gould-National Batteries, Inc., Trenton 7, N. J.

Always use Gould-National Automobile and Truck Batteries



Gould Industrial Truck Battery —America's Finest

More Power to you from

gould BATTERIES

©1957 Gould-National Batteries, Inc.

Circle No. 63 on Reader Service Card for more information

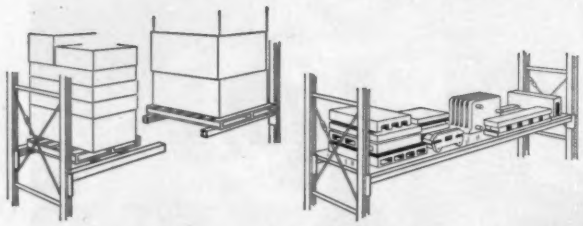
TODAY'S MODERN RACK

American

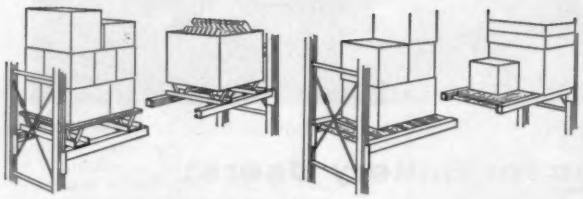
Slide-n-Lock adjustable

STORAGE RACKS

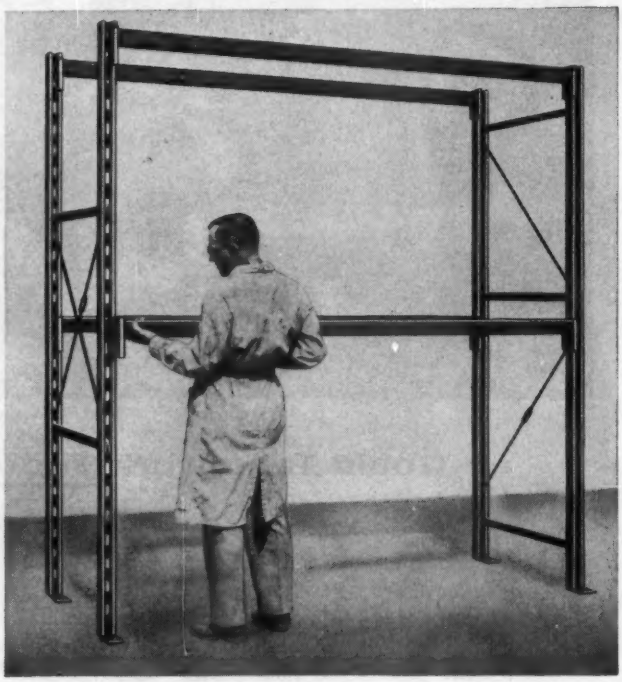
the last word in Storage Rack Design and Value!



If you rack on pallets .. If you store dies



If you rack on skids .. If you store bulk



For adjusting to any given height, you simply move stringer up or down a specially formed post, and it locks itself in place. See opposite page for more details.

PATENT APPLIED FOR

the American Slide-n-Lock Adjustable Rack Is the RACK for you!

NO BOLTS

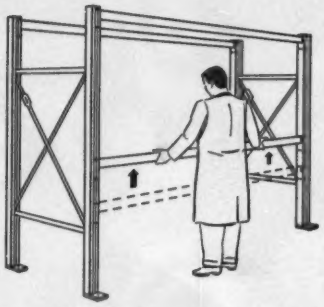
NO WELDING

ALL PARTS CARRIED IN STOCK

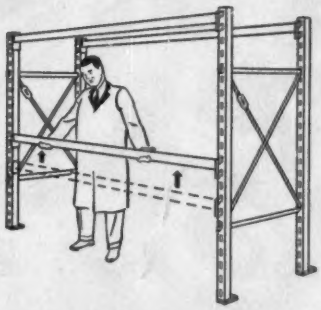
IMMEDIATE DELIVERY

BUILT FOR TOMORROW!

Easy and Quick to adjust....just raise or lower like a window

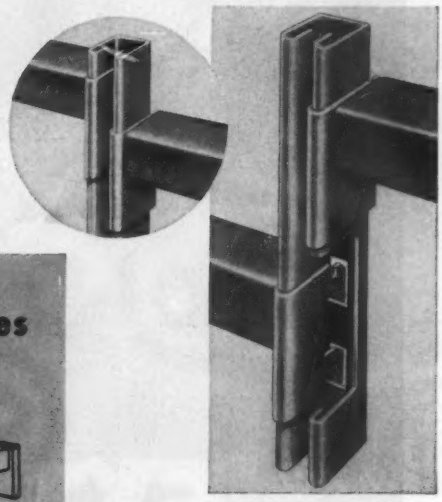


One man (no fork truck required) can adjust the rack to any level. The "U" shaped brackets SLIDE up and down the formed posts.

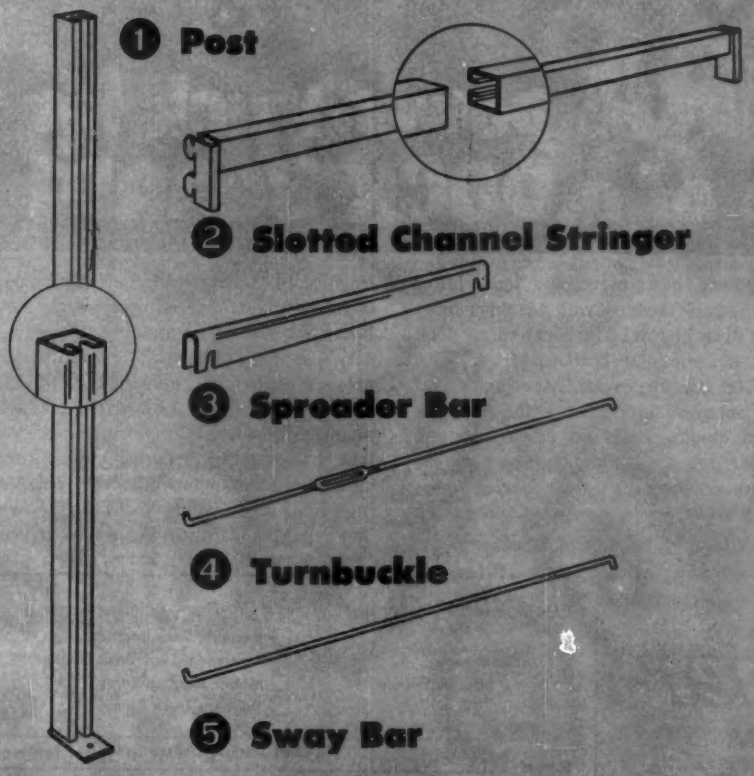


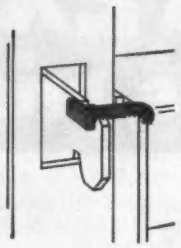
When the desired level is reached, you merely slide the dual wedges into the slots in the back of the posts. The dual wedges lock themselves in place.

Note the "smooth line" construction as seen from the front. Matching contours of the specially formed post and locking bracket leave the front (aisle side) free of any protruding parts. The cutaway section shows how the dual wedges engage toward the rear of the rack.



over 800 different sizes and capacities from 5 basic parts





SAFE-T-PIN positively prevents the stringers from being jarred out of the posts.

Before you buy a rack of any kind, be sure to investigate the many advantages of the American Slide-n-Lock Adjustable Racks. Our special 8-page catalog gives detailed information regarding this ingenious rack. You should by all means have a copy for your files.

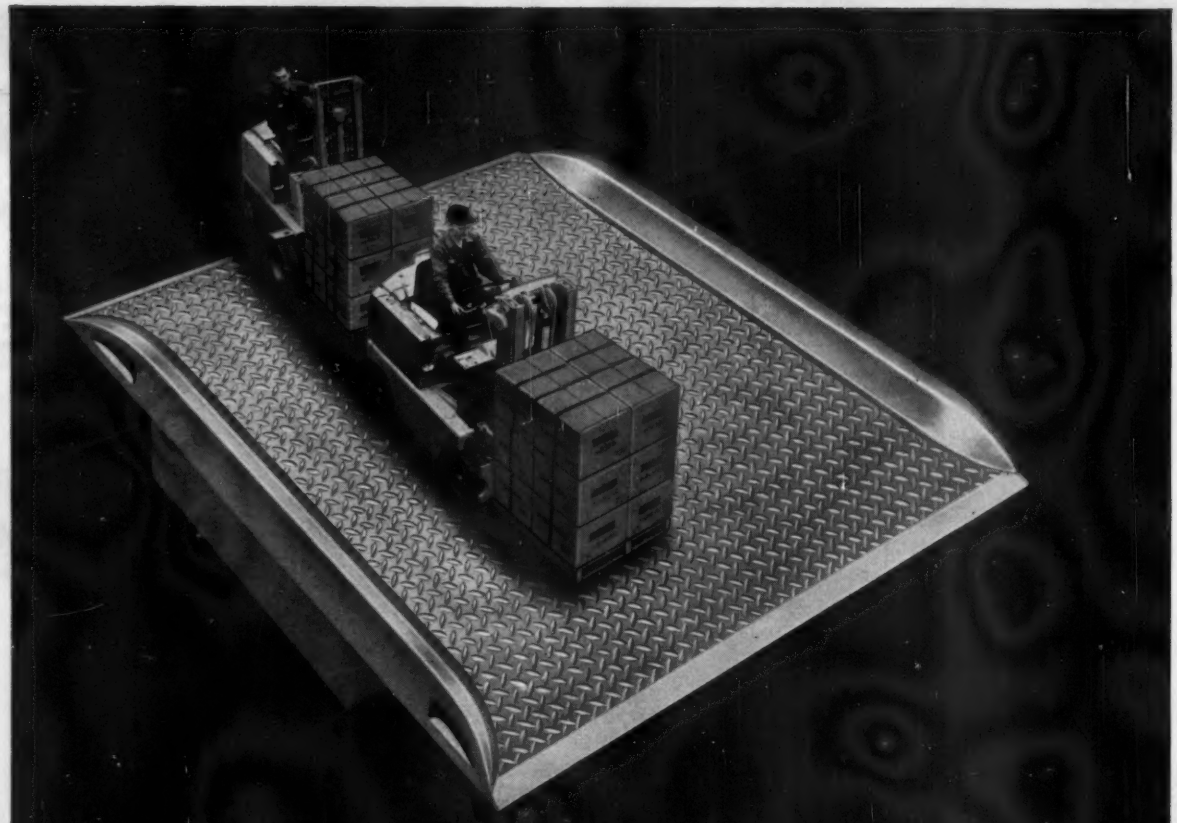
Send for Catalog Today!

AMERICAN METAL PRODUCTS COMPANY

STORAGE RACK DIVISION

5959 LINSDALE AVENUE amp® DETROIT 4, MICHIGAN

Circle No. 150 on Reader Service Card



an EXTRA power truck for the price of a DOCK BOARD!

Your power trucks move *more* loads faster when you back them up with Magliner magnesium dock boards! Magliners speed dock traffic . . . eliminate bottlenecks . . . give you faster loading cycles. Men, loads and equipment move surer, safer— efficiency goes up and loading costs go down! As one customer put it:—"*With Magliners on our dock, we get more out of our loading equipment. It's like having an extra power truck on the job . . . for the price of a dock board!*"

Engineered to meet the specific requirements of your dock and operating conditions, Magliner dock boards are made of magnesium for easy one-man handling . . . rugged, dependable service. Safely handle loads up to 20,000 lbs. *Other dividends?* Low initial cost. Less maintenance. Plus exclusive features like Magliner's Tire-Saver side curbs, Triple-Strength curb ends, and many others. You get big important cost-savings—*ALL* ways—when you put Magliners to work on your dock!

MagLiner
MAGNESIUM
DOCK BOARDS

Canadian Factory: Magline of Canada Ltd., Renfrew, Ontario

Please send me my copy of "How to Cut Dock Loading Costs."

Check here for information on:

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VIEWS and TRENDS

How Much Should We Pay For Protection?

E. H. Look

In evaluating industrial packaging, the cost of proper protection is the prime consideration.

This was said by Edward H. Look, Vice President, for sales, Portco Corporation, Vancouver, Washington, at the Material Handling and Packaging Conference recently held by Stanford University.

The more you think about it, the more significant this statement becomes. We all know of the many instances in which a package costs more than the product it contains. We also know that *complete* protection can be provided to anything if cost is no consideration.

How much protection is required for a product is a function of the distribution process through which the package will go. Little protection from damage—other than barriers to such conditions as moisture, dust, and corrosive atmospheres—need to be given to a package which will remain on shelves for lengthy periods of time.

Protection against impact, vibration and physical contact may be required for the *movement* of the product—movement through a plant or in receiving, shipping, and transportation phases of distribution. As far as these operations are concerned, it is the material handling function that is vitally concerned. Without any handling, the need for protection would be minimum. With rough handling, protection would have to be extensive.

It is apparent, then, that the cost of protection can be substantially reduced through handling methods which subject a product to a minimum of these conditions.

For a time, now, material handling men have been increasing their awareness of this situation. For instance, there are in wide use devices which record shock and vibration given to a product while it is being handled by conveyor, by industrial trucks, in rail cars, trucks, and aircraft—to name a few applications. The devices have only one purpose—that is to determine how much shock is imparted to a product while it is being moved.

The reduction in the cost of protective packaging, it seems obvious, can only be achieved when material handling and packaging minds are fully coordinated.

Packaging costs, like so many handling costs, are often hidden, and there is little or no return from them. Why this has been so, in the past, was also discussed by Mr. Look. He pointed out that retail packaging has long been a primary concern of top management while the responsibility for packaging in the "industrial" phases has been side-stepped by all and shared by none. ("Industrial packaging" he defined as that which is not a direct part of the merchandising or selling *appeal* of a product).

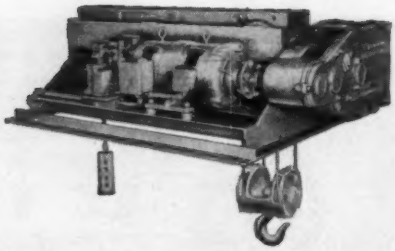
For too long, as he indicated, the choice of packaging materials has been left, for the most part, to the discretion of a purchasing agent or a shipping foreman, neither of whom has had the time, training, or material handling know-how which would qualify them for the job.

Consequently, many products have been over-packaged, or under-packaged, with the result an added, unnecessary cost burden to the producer.

However, as the speaker pointed out, more and more companies are becoming aware of the extent of damage claims on the one hand and excessive packaging costs on the other. Today, they are insisting upon a more realistic approach to the packaging of their products.

Ed Leighton

Editor



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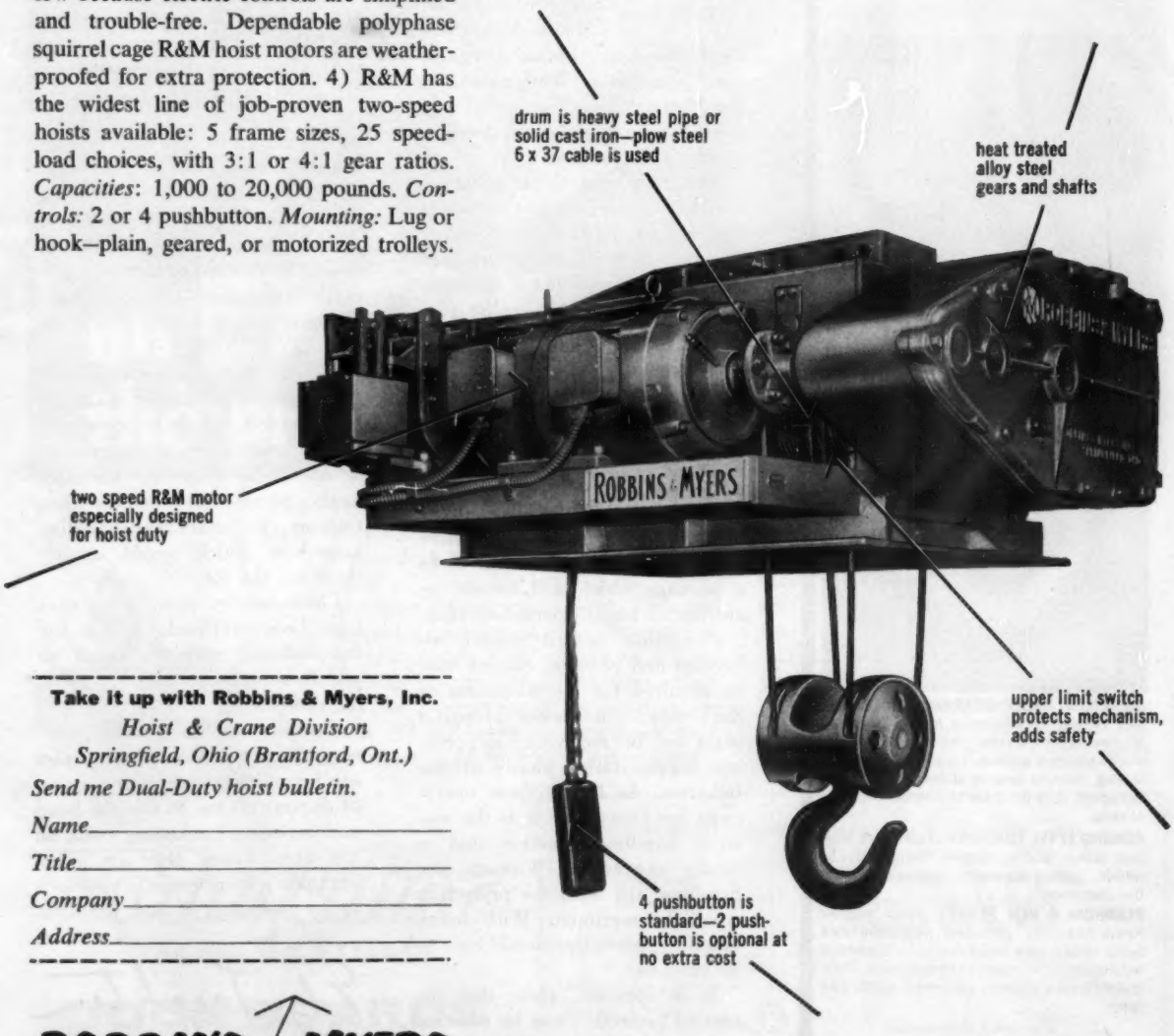
slow spotting, fast lifting hoist


drum is heavy steel pipe or solid cast iron—plow steel 6 x 37 cable is used
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upper limit switch protects mechanism, adds safety
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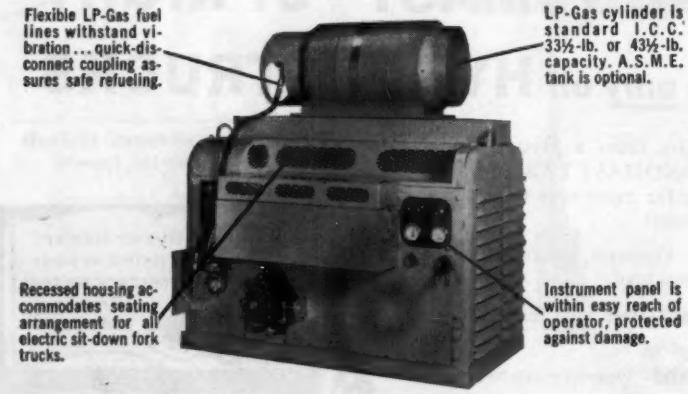
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NEWS FROM THE AMHS CHAPTERS

ERIE, PA.—**Ronald Robison** Talon Mfg. Co., is new president of the Northern Pennsylvania Chapter of AMHS. Vice president is **Bruno Ambrose,** of Fenestra, Inc. **Dwight Infield,** Lord Mfg. Co., is secretary-treasurer.

PHILADELPHIA, PA.—New president for the Philadlephia chapter **Wallace W. DeWitt,** Rohm & Haas Co. **Frank G. Kevra,** E. I. du Pont de Nemours & Co., Inc. was elected vice president. They were installed at a recent meeting. In addition, the same meeting was highlighted by an address by **Thomas Mangold,** also of du Pont, on the subject, "What Is Being Done About Bulk Shipping and Handling".

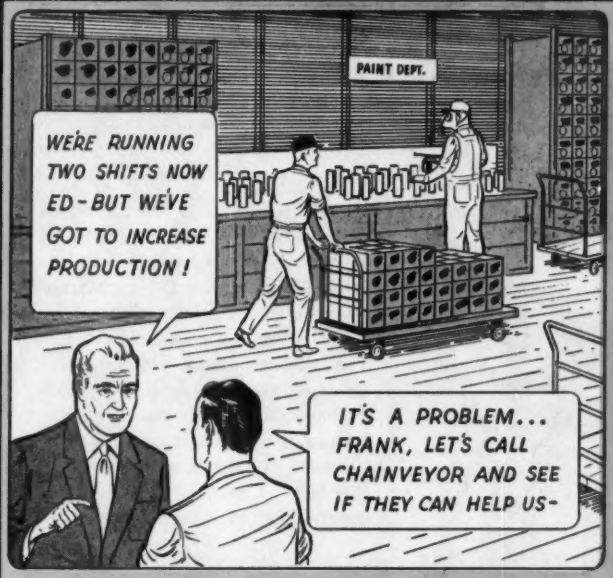
HOBOKEN, N. J.—The New Jersey Chapter of AMHS recently held its

President Herbert Goldstein (left) of AMHS N. J. makes token book presentation to Dr. A. Lesser, Jr. of Stevens Institute of Technology (right) at 7th Annual Conference.

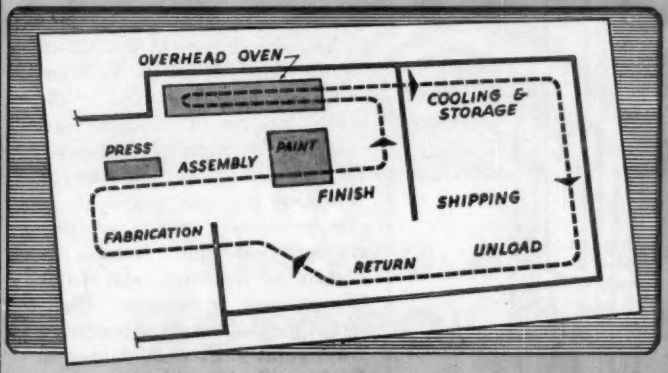
7th Annual Industrial Material Handling Conference, at Stevens Institute of Technology. Theme of the conference was "let's Make the Job Easier". Among the highlights of the conference was a demonstration of an electronic computer solving a fork truck scheduling problem. Also featured were demonstrations of 2-way radio controlled fork trucks. Speakers were **W. C. Allen,** Westinghouse Electric Corp.; **David Kaplan,** Economics of Distribution Foundation, Inc.; and **W. T. Wolte,** General Elec-

CHAINVEYOR

Production Capacity *Doubled*


PAINT DEPT.
WE'RE RUNNING TWO SHIFTS NOW ED - BUT WE'VE GOT TO INCREASE PRODUCTION !
IT'S A PROBLEM... FRANK, LET'S CALL CHAINVEYOR AND SEE IF THEY CAN HELP US-

Chainveyor has standard *16" radius curves*, can even travel vertically up or down. This *versatility* saves floor space and can solve your most complex conveyor problems. Its *dependability* has been proved in all types of industry. Complete enclosure and heat-treated moving parts insure long life with minimum upkeep.



Before, parts were hand trucked to paint area, unloaded, painted on each side in two operations, manually stacked for drying and again loaded and trucked to shipping. CHAINVEYOR'S solution was a system that rapidly moves parts from assembly thru painting and baking ovens to shipping... *without handling.* Rotating carriers automatically turn the parts to insure even painting in less than half the time.

- ***Chainveyor** carries up to 30 pounds on 6" centers. Individual loads up to 120 pounds are supported by load bar attachments.*
- ***Low in first costs.** Chainveyor assists in increasing production and decreasing overall costs.*
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- ***Dualine systems** afford unlimited application in any stop and go production situation or in-process storage, combining power and free operations.*
- ***Proved dependability** by successful installations in all types and phases of industry.*

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Illustrated catalogue and complete details

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- ***retain low collapsed height***

Here is the problem! Loading trailers and boxcars requires low-mast lift trucks. So do low doorways. Yet in the warehouse or storage yard, maximum tiering height is a necessity. How to stack high when headroom is *high* and stay *low* when headroom is low is the problem.

Here is the solution! It's simple. Attach a Kughler Elevating Fork to your low-mast lift truck. Just a few inches or as much as five feet can be added by this attachment.

Here is an example: A fleet of lift trucks recently was ordered by a large company. Unit loads only two high could be stacked because doorways limited selection of trucks to those with fork height of 119". To stack three high required 130". For lack of 11" *one third* of the warehouse capacity would be wasted. *Kughler Elevating Forks were the solution.* They furnished the extra height needed to utilize the warehouse to its *maximum* capacity.

If you are not using *your* warehouse to its maximum capacity for the same reason, contact your local lift truck dealer—or write, wire or phone us direct.

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tric Company. Approximately 150 persons attended the conference.

PITTSBURGH, PA.—Presentation of thesis studies by two University of Pittsburgh undergraduate student groups highlighted the recent annual College Night sponsored by the Pittsburgh Chapter of AMHS. The student teams presented analysis of material handling methods at two local manufacturing plants, then supported their recommendations for cutting handling costs in the face of sharp "management" questioning by chapter members.

CHICAGO, ILL.—Officers for 1957-58 have been named by the AMHS Chapter here. **Richard F. Bancroft** is the new president of the group. **Robert N. Roegner** becomes exec. vice president. **Joseph W. Seemuth** and **Thomas B. Williams** are vice presidents in charge of membership and programs, respectively. Norman L. Pinkert is secretary, and **Jack Christensen** is treasurer. Directors of the chapter are: **Alexander Buy, John J. Stroud, James E. Carley, C. Thorkelson** and **George Wishner.** The national director is **Raymond B. Mansfield.**

HAMILTON, ONT.—An address on the subject "Material Handling as Associated with Air Freight" was the highlight of a regular meeting of the Hamilton Chapter recently. The speaker was **W. D. Patterson,** cargo sales manager at Toronto for the Trans Canada Air Lines.

ROCHESTER, N. Y. —A tour of the Rochester Products Division of General Motors Corp. was offered recently to members of the Rochester Chapter of AMHS. It was held as the annual plant tour of the group. Examples of mechanized handling systems were shown, including various types of conveyorized operations.

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ACME STEEL Dexion Slotted Angle frames adjustable shelf cart.

ACME STEEL Dexion Slotted Angle supports pallet rack & mezzanine storage.

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ACME STEEL DEXION SLOTTED ANGLE

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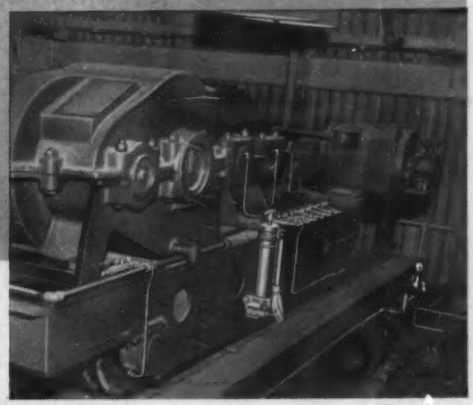

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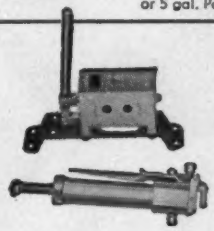

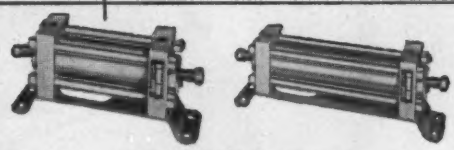

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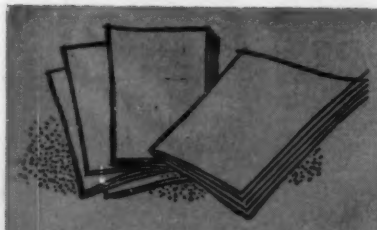

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How to Cut Costs with Conveyors . . . one user employing 275 people, completely conveyorized his plant so that now products stay on conveyors until packaged and sent to shipping. Standard's specialists will be pleased to help make evaluations and recommend the proper equipment and its application to meet your specific needs. Further information is available from Standard Conveyor Co.

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PLEASE SEND ME ADDITIONAL INFORMATION AND LITERATURE ON ITEMS CIRCLED BELOW.

1	26	51	76	101	126	151	176	201	226	251	276	301	326	351	376	401	426	451	476
2	27	52	77	102	127	152	177	202	227	252	277	302	327	352	377	402	427	452	477
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4	29	54	79	104	129	154	179	204	229	254	279	304	329	354	379	404	429	454	479
5	30	55	80	105	130	155	180	205	230	255	280	305	330	355	380	405	430	455	480
6	31	56	81	106	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481
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11	36	61	86	111	136	161	186	211	236	261	286	311	336	361	386	411	436	461	486
12	37	62	87	112	137	162	187	212	237	262	287	312	337	362	387	412	437	462	487
13	38	63	88	113	138	163	188	213	238	263	288	313	338	363	388	413	438	463	488
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15	40	65	90	115	140	165	190	215	240	265	290	315	340	365	390	415	440	465	490
16	41	66	91	116	141	166	191	216	241	266	291	316	341	366	391	416	441	466	491
17	42	67	92	117	142	167	192	217	242	267	292	317	342	367	392	417	442	467	492
18	43	68	93	118	143	168	193	218	243	268	293	318	343	368	393	418	443	468	493
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20	45	70	95	120	145	170	195	220	245	270	295	320	345	370	395	420	445	470	495
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22	47	72	97	122	147	172	197	222	247	272	297	322	347	372	397	422	447	472	497
23	48	73	98	123	148	173	198	223	248	273	298	323	348	373	398	423	448	473	498
24	49	74	99	124	149	174	199	224	249	274	299	324	349	374	399	424	449	474	499
25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500

and BULLETINS

advertisements in this publication

Rustproof Lockers, Shelving and Cabinets . . . smooth, lustrous enamel is perfectly and permanently bonded to the phosphate undercoat—enemy of rust. Then sprayed with gleaming enamel and baked to enduring hardness, A catalog describing their complete line is offered you by Penco Metal Products Div., Alan Wood Steel Co.

Circle 96 on Reader Service Card

One Man Does the Work of Three . . . with 2-strip sealing. Because center seam sealing with Sisalkraft Sealing Tape requires only two strips. Manpower is released for other jobs. Tape and time are saved also. More facts about the labor saving uses of Sisalkraft reinforced tape and the nearest source of supply is available from American Sisalkraft Corp.

Circle 9 on Reader Service Card

Cost Saving Features . . . of the only "Stand-UP" gas-operated truck on the market are described in a folder offered you by Lamson Mobilift Corp.

Circle 75 on Reader Service Card

Performs Loading Job in 1/2 Time and at 1/3 Cost . . . reports one user of the Austin-Western Hydraulic Crane. Ease of operation and low maintenance are other features of this crane. Further information is available from the Austin-Western Works.

Circle 11 on Reader Service Card

Cutting Production Costs . . . a booklet, "How 35 Manufacturers saved with USS Cyclone Processing Belts" contains 35 actual case histories of savings on production costs, materials, time, space, breakage and labor, through the use of Cyclone Belts. One or more of these 35 case histories are bound to help you in your own problems. It's yours for the asking from Cyclone Fence Dept., American Steel & Wire Div., U. S. Steel Corp.

Circle 43 on Reader Service Card

How to Double Your Warehouse Capacity . . . is the title of a 16-page illustrated booklet on time- and space-saving ideas. It's yours for the asking from The Frick-Gallagher Mfg. Co.

Circle 58 on Reader Service Card

Plant Ideas to Make Efficiency Grow . . . is the title of a new folder offered you by the Magic Door Sales Div., The Stanley Works. It tells how you can save man-hours, reduce damage to doors and equipment, conserve conditioned air and improve working conditions by opening and closing plant doors automatically.

Circle 116 on Reader Service Card

Giant Power With Little Effort . . . the Nolan one-man car door opener easily multiplies one man's strength a hundred-fold and more. Opens any box car door in 20 seconds or less. Details are available from the company, giving full information.

Circle 92 on Reader Service Card

Staples Cartons After They're Filled . . . the International Dual Stapler simultaneously and automatically staples top and bottom flaps of cartons securely from the outside. One man on line can handle up to a thous cartons an hour with ease. De are offered you by Internati Staple & Machine Co.

Circle 72 on Reader Service C

Custom Engineered Mate Handling Equipment . . . cial hangers and racks, indust trailers, hoppers and bins, h trucks, etc. are all described literature available from Lan Co.

Circle 77 on Reader Service C

Precise Load Spotting F Fast Lifting . . . when you w it is the claim made by Robl & Myers, Inc. for their Dual-D two speed hoists. First cost maintenance are low because tric controls are simplified trouble-free. Motors are weat proofed for extra protection bulletin is available from the c pany, giving full details.

Circle 106 on Reader Service C

A Push Button Order Fill System . . . in which an op tor at a control console dir the flow of material from 66 age lines was recently installed Mathews Conveyer Co. Infor tion on equipment designed meet your individual requirem is available from the compan

Circle 84 on Reader Service C

Shelving Reference Man . . . describes and illustrates t complete line of steel shelving is available from Deluxe M Furniture Co.

Circle 45 on Reader Service C

One man on the
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by International
Co.
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Spotting Plus
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illustrates their
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Deluxe Metal

der Service Card

Use This

READER SERVICE CARD

to obtain information on any item in this issue

New Equipment & Supplies .....Starting on Page 163
Useful Literature .....Starting on Page 134

PLEASE PRINT **JULY 1957. Do not use after 10-15-57**

Name ..... Position .....

Company ..... Kind of Business .....

Street .....

City ..... Zone..... State.....

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FIRST CLASS
PERMIT No. 8066
SEC. 34.9 P. L. & R.
CLEVELAND, OHIO

BUSINESS REPLY CARD
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

3c POSTAGE WILL BE PAID BY: Reader Service Department

FLOW

812 HURON RD. • CLEVELAND 15, OHIO

CATALOGS AND BULLETINS

Continued

Directs Conveyor Traffic . . . the Ultimate Traffic Cop is used where two sections of power, belt, live roller or chain conveyor converge and permits one unit on the line to pass on while the other is stopped by an arm. When flow of material ceases, material on other line passes. Full details are available in a bulletin from Island Equipment Corp.

Circle 73 on Reader Service Card

Superior Visibility . . . from a Hyster truck equipped with a Monomast Upright is said to enable the operator to move more tonnage per hour because it makes possible a faster approach, accurate load placement with minimum maneuvering, less package damage and less operator fatigue. Complete details are available from The Hyster Co.

Circle 67 on Reader Service Card

Sample Roll of Gummed Sealing Tape . . . is yours for the asking from Mid-States Gummed Paper Co. The exclusive gumming in their Green Core tape is water soluble, requiring no special additives, yet it reaches tack almost at the instant it touches the moistener and stays tacky long enough to tape the biggest carton.

Circle 88 on Reader Service Card

Handle Loads With Precision, Safety and Low Operating Cost . . . the Shepard Niles single beam crane can be supplied with push button or pendant rope control for operation from floor, cab or remote location. Push-type or motor-driven trolley types of hoists, including close clearance units, are commonly employed on single I-beam cranes. A bulletin on the single beam crane is offered by Shepard Niles Crane and Hoist Corp.

Circle 111 on Reader Service Card

Uninterrupted Feeding of Parts-in-Process . . . is accomplished by teaming the Work-O-Matic drop-bottom box with a specialty designed positioning stand.

The result is that the operator and machine receive a continuing supply of materials without waiting or losing production and by eliminating stooping, stretching or bending for the operator. Complete catalog information is available from Union Mfg. Co.

Circle 126 on Reader Service Card

Magnesium Truck Ramp . . . of all welded construction—heavy side and center trusses—safety side rails and curb ends and full range locking device is fully detailed in data available from Penco Engineering Co.

Circle 95 on Reader Service Card

Protect Stock and Speed Inventory . . . with EMI quality racks. Made of strong, tubular steel, they are adjustable to fit any space or unit load. Special racks designed to your specifications with field engineering service on any installation. An illustrated catalog is offered you by Equipment Mfg., Inc.

Circle 52 on Reader Service Card

Increases Freight Handling Efficiency . . . this is the claim made by Hewitt-Robins for their Jones two-way car puller. To move cars, the operator merely hooks a cable to one of the cars and pushes a button on the control panel. Only a small part of one man's productive time is needed. Further information is available from Hewitt-Robins.

Circle 65 on Reader Service Card

Systematize Scrap Salvage . . . keeping a constant, accurate check on the amount of scrap collected in individual bins is an easy job for the rugged, time-proved, field tested Dillon weight indicator. Adjusts for tare. Attaches to any hoisting crane for on-the-move readings. An illustrated catalog is yours for the asking from W. C. Dillon & Co., Inc.

Circle 47 on Reader Service Card

Portable Bag Closer Handles All Types of Bags . . . weighs only 10½ pounds. Requires no installation—plugs into any outlet. Simple to operate and maintain. Details available from Dave Fischbein Co.

Circle 57 on Reader Service Card

Cut Handling Costs and Speed Deliveries . . . with one of the trailers described in a catalog on their complete line from Fab-Weld Corp.

Circle 54 on Reader Service Card

For Only 3c an Hour . . . you can move boxes or cartons 200 feet. This is the claim made by the A. B. Farquhar Div., The Oliver Corp. for their Ve-Be-Veyor Aluminum Power Belt Conveyor. The full details are available from the company.

Circle 55 on Reader Service Card

Cost Less Per Year . . . is the claim made by Sterling Wheelbarrow Co. for their barrows. Construction is all steel, all welded with no rivets. Maintenance costs are practically nil. A catalog is available from the company.

Circle 117 on Reader Service Card

Lift Jacks and Skids . . . together with plastic, rubber and metal wheels are discussed in literature offered you by Ironbound Box & Lumber Co.

Circle 137 on Reader Service Card

How to Streamline Your Shipment Addressing for Speed and Economy . . . is the title of a booklet offered by Weber Marking Systems Div. of Weber Addressing Machine Co., Inc. Some of the subjects treated are how to evaluate the efficiency of your shipment addressing operation, modern systems for addressing labels and tags, latest direct-to-carton stenciling systems and integrated shipment addressing.

Circle 132 on Reader Service Card

Guide to Equipment Ideas . . . you'll find it easy to custom-frame plant equipment for material handling and even easier to think of more idea equipment using Acme Steel Dexion Slotted Angle. A copy of the "Dexion Construction Guide" is yours for the asking from Acme Steel Co., Dexion Div.

Circle 1 on Reader Service Card

Protects Workers During Loading Operations . . . the CAPCO dock covers completely enclose the space between car and building doorways affording protection during inclement weather. They prevent accidents and insure against loss of heat or refrigeration. Complete information is available from CAPCO.

Circle 30 on Reader Service Card

Closed Circuit Pneumatic System . . . conveys finest free flowing products without filters. A bulletin on the "TransVair" system is offered you by The Young Machinery Co.

Circle 136 on Reader Service Card

Floor Crane Converts to Truck Crane . . . by simply removing four bolts. The entire truck crane assembly weighs only 100 pounds. Information is offered you by Ruger Equipment, Inc.

Circle 109 on Reader Service Card

Ride-A-Man Electric Trucks . . . are light weight and small, yet packed with plenty of power for a full eight hours operation on

Rugged Tote Boxes made of

US RUBBER **Royalite®** NITRILE THERMOPLASTIC SHEET

Light! Quiet! Economical!

Tough—non-splintering, non-warping. No sharp corners to catch clothing or injure hands.

Not affected by oils, alkalies, most acids. Non-corrosive, non-magnetic, non-toxic.

Lightweight. Seamless. Hand grips on all 4 sides. Can be efficiently stacked or nested.

Tried and proven by years of service, tough, lightweight, noise-free Tote Boxes made of Royalite speed up production-line operations . . . reduce handling costs . . . eliminate high-cost maintenance. Made in a wide variety of sizes and shapes for ready adaptability. Get more information on Tote Box sizes and prices as well as special Royalite material handling applications—write:

US RUBBER **United States Rubber**

2638 N. Pulaski Road, Chicago 39, Illinois

Circle No. 125 on Reader Service Card for more information

FOOD STORAGE: Trucks and freight cars roll inside one of the world's largest food storage plants at Calumet Industrial District Company. There they are loaded and/or unloaded by a fleet of DYNAMOTIVES also used in warehousing as above.

METAL WORKING: This DYNAMOTIVE equipped with trash hopper attachment sees rugged service indoors and out for Vapor Heating Corp., makers of heating equipment for railway cars.

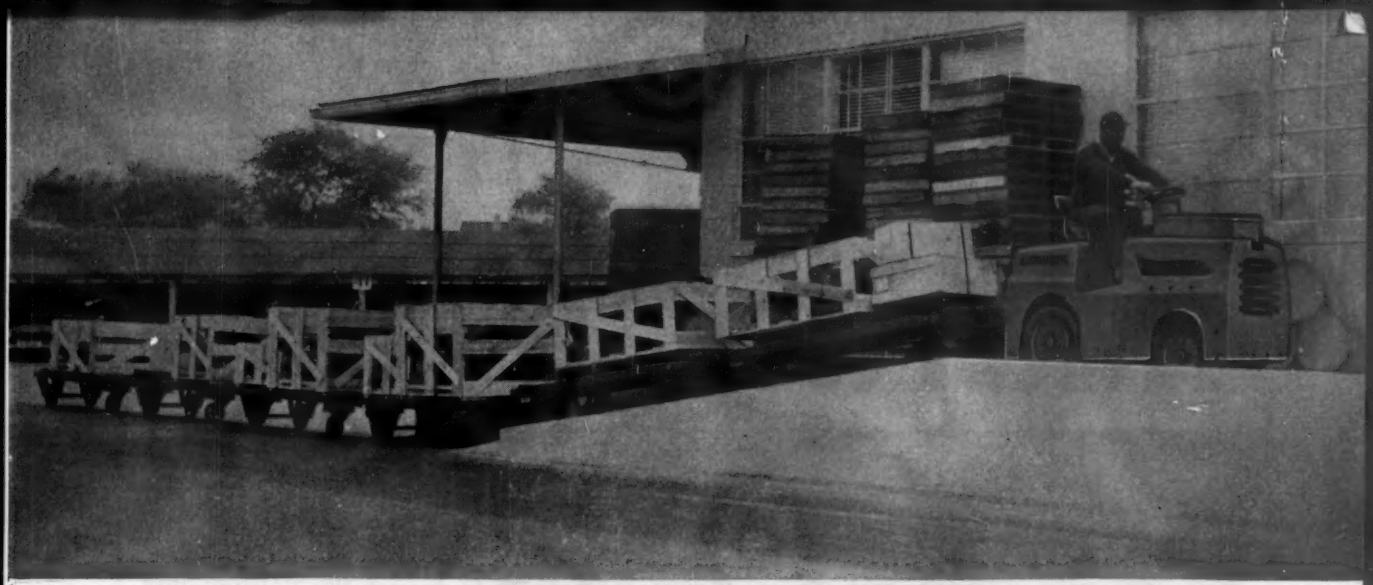
PAPER CONTAINERS: Ace Carton Corp. uses this DYNAMOTIVE in many ways. Here it has special chisel forks for handling baled wastepaper.

FIBER GLASS PRODUCTS: Above DYNAMOTIVE handles 500,000 lbs. of incoming material per month for the Pittsburgh Plate Glass Company's Fiber Glass Division. It is used for loading and unloading trucks as well as storage operations.

CONCRETE PRESSURE PIPE: Rain—Snow—Mud—DYNAMOTIVE handles yard operations for the Lock Joint Pipe Company—this particular unit paid for itself in less than one year.

Automatic

141 W. 87th St., Dept. K-7
Chicago 20, Ill.



HOISTS—PUMPS—FANS—MOTORS: DYNAMOTIVE tractor above "walks away" with a 19,225 lbs. load up a 12% grade. "A rugged, economical piece of machinery" writes G. C. Givens, maintenance superintendent for Robbins & Myers, Inc., manufacturers of electric fans, motors, hoists, pumps and tool motor parts.

NOW A GAS* TRUCK THAT DOES MORE WORK ON 25% TO 30% LESS GAS...

Automatic® DYNAMOTIVE

***Gas-driven generator powers direct-drive electric motor...no clutch... no torque converter...no fluid coupling...no transmission whatsoever**

The secret of Automatic DYNAMOTIVE'S (Series GLF) proved superior performance lies in its utter simplicity...an engine-driven variable voltage generator supplies electrical power to the drive motor direct coupled to the drive axle. This proved power train *without gears* eliminates slippage and power loss through heat build up. At the same time, stresses on the engine are reduced, greatly increasing engine life. Truck down time is further reduced by the elimination of hundreds of moving parts found in conventional transmission and torque converter drives. Additional gas mileage is achieved by the inherent over drive and torque multiplying features of the electric power train.

But only by seeing it at work can you realize how many and how important DYNAMOTIVE'S advantages really are. To name only a few:

Positive Inching Control...precise spotting gives faster, safer handling of loads.

Job Adjustable...directional control can be adjusted...on the job...for instant power or cushion-smooth take off.

Tilt and Lift Controls...optional for foot or finger-tip operation.

Full Width Posture Seat...accessible from either side... reduces driver fatigue.

Visibility...high visibility of fork position throughout lifting range.

But, see for yourself...ask for a demonstration. No obligation...just mail coupon below.

G.L.F. capacities: 4,000 to 10,000 lbs. with solid tires...4,000 and 6,000 lbs. with pneumatics. Tractors available in 2,500 and 3,500 lbs. draw bar pull. Factory service available in over 100 cities.

Automatic Dynamotives are listed by Underwriters' Laboratories Inc., and Factory Mutual Laboratories

But there's much more to be told. Mail the coupon today for complete specifications and FREE "Cost-Cutter" Booklet that shows how to chart and analyze your own materials handling needs. ➡

MAIL THIS COUPON TODAY

Automatic Transportation Company
Dept. K-7, 141 West 87th Street, Chicago 20, Illinois, U.S.A.

Please mail me complete specifications for the Automatic DYNAMOTIVE and include Free copy of your booklet. "Materials Handling COST CUTTER."

FIRM NAME.....by.....

ADDRESS.....

CITY & ZONE.....STATE.....

Circle 12 on Reader Service Card

look beyond the price . . .

you'll see that you get the most for your money in

MATHEWS CONVEYERS

A push button order filling system in which an operator at a control console directs the flow of material from 66 storage lines. Photo courtesy of Gallo Sales Co.

Most plant operating people, when they buy conveying systems, are looking for the equipment that is best for **their** plant—equipment that is designed to meet their individual requirements. They are looking beyond the price . . . looking to quality—to dependability. Mathews engineers have been designing and building conveying systems for over 50 years, and a great amount of this equipment has been applied in metalworking plants. This is why operating people everywhere have an extra measure of confidence in Mathews equipment—and why you see Mathews Conveyers in metal-producing and fabricating plants everywhere.

MATHEWS CONVEYER COMPANY

GENERAL OFFICES . . . . . ELLWOOD CITY, PENNSYLVANIA

PACIFIC COAST DIV. . . . MATHEWS CONVEYER COMPANY WEST COAST, SAN CARLOS, CALIFORNIA

CANADIAN DIVISION . MATHEWS CONVEYER COMPANY, LTD., PORT HOPE, ONTARIO.

MATHEWS

Fifty Years of Leadership in Mechanized Handling

Circle No. 84 on Reader Service Card for more information

CATALOGS

Continued

most jobs. They are said to combine the speed and convenience of a rider type with lower cost and maneuverability of a "walkie." Full details are given in a catalog offered by The Moto-Truc Co.

Circle 90 on Reader Service Card

Stop Tape Dispensing Problems . . . with an Ideal 200E electric Clip-A-Tape machine. Measures out the exact length of gummed tape you want from 3 inches to 105 inches. The selectamatic keyboard assures accurate dispensing. Water is thermostatically controlled and heated. Full information is available from the Ideal Stencil Machine Co.

Circle 69 on Reader Service Card

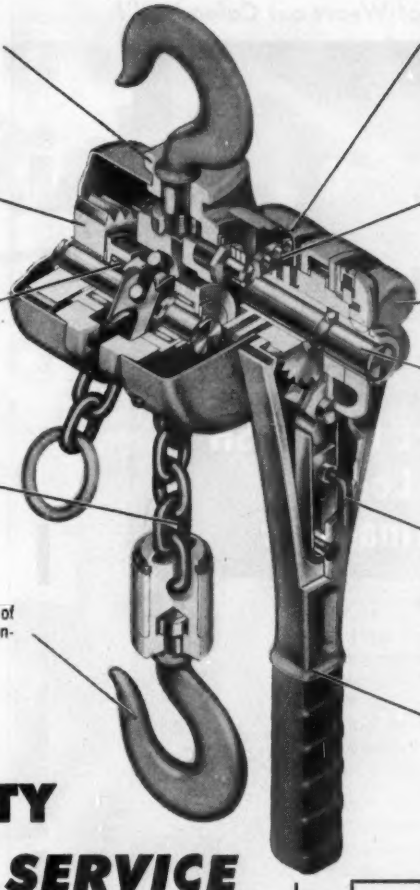
Reduces Fire and Accident Hazards . . . Tokheim high vacuum pumps help prevent spilling, slopping, over-filling and dripping. Operate on both forward and backward strokes. Delivers 20 gallons per 100 strokes. Available with hose or spout outlets. Full information is available from Tokheim Corp.

Circle 122 on Reader Service Card

Protection from Inclement Weather During Loading . . . operations is afforded by the use of the Dazzo retractable tunnelled passageway installed between building door and truck or freight car door. Reduces loss of heat or cold in the plant while dock doors are open for loading or unloading. Full information is contained in literature offered you by Dazzo Products Co.

Circle 44 on Reader Service Card

Reinforced Sealing Tape . . . Rexford's Glas-sert, reinforced in both directions with Rayon and Fiber-glass strands, is said to be especially suitable for high speed automatic taping machines. It is also said to save two-thirds the



FRAME. Tough, shock-resistant aluminum alloy. Seals out dirt, dust, grit.

SPUR GEARING. Built like a hoist. Turns practically every ounce of effort into lifting action.

ANTI-FRICTION BEARINGS. Assure smooth, easy operation and long service life.

LOAD CHAIN. Special case-hardened alloy steel. Easily handles toughest lifting and pulling jobs.

SAFE-GUARD HOOKS. Warn of danger when overloaded by opening slowly. Swivel freely.

TOTALLY-ENCLOSED MECHANISM. Working parts protected. Lubrication is permanent type.

AUTOMATIC LOAD BRAKE. Designed for heavy-duty service. Positive holding power.

HAND GRIP WHEEL. Turns easily to lower or raise hook to engage load.

SHAFTS. Tough alloy steel, heat treated for extra strength.

FINGER-TIP CONTROL LEVER. Changes action from "up" to "down" and into "free-wheeling" with a flick of the finger.

HANDLE FITS HAND. Can't fly back. Only 12" long for easy operation on any job.

'TUGIT' QUALITY *PAYS OFF IN SERVICE*

Plenty of portable lifting and pulling tools are on the market — *but there is only one 'Tugit'.* Built like a regular hoist but operated by pumping a handle, it works smoothly at any angle, anywhere.

The smallest 'Tugit' weighs a mere 16½ lbs. yet can lift or shift a ton with a pull of only 40 lbs. on the handle. The average ratchet-lever hoist requires 36% more effort for the same job. Lifting and lowering action is smooth — loads can be moved as little as 3/32" for accurate spotting.

'Tugit' is tool-box size. It is built tough for extra safety. Maintenance men, assemblers, utility crews, construction gangs, road builders — all find new uses for 'Tugit' every day. 1 and 2-ton sizes available. No other portable lifting and pulling tool offers so much in quality and performance. *Ask your "Shaw-Box" Distributor for a demonstration or write us for Bulletin 388.*

HERE ARE A FEW OF THE THOUSANDS OF JOBS 'TUGIT' CAN DO BETTER

Move machinery and motors . . . assemble parts . . . stretch cable . . . join conveyor belts and piping . . . erect fences . . . unearth posts, stumps, boulders . . . lift truck tires and heavy repair parts . . . operate valves, freight car and hopper doors . . . lift furnace and vat covers . . . install overhead equipment.

SAFETY HOOKS can be provided on 'Tugit' to "lock in" slings and other attachments used to support loads.

'TUGIT' CARRYING CASE. Durable dust-tight canvas, sewed and riveted to wooden base plate. Has slide fastener and leather handle. Makes 'Tugit' easy to transport from job to job.

'TIPIT'. A link chain sling for tipping engines, motors and other units in tight spots. Attached to 'Tugit' or a regular hoist. Can be operated with any ½" wrench. Weighs 8¼ lbs. Capacity: 1 ton.

57B-8C

'Tugit'® HOISTS

MAXWELL MANNING & MOORE INC. M&M TRADE MARK

MANNING, MAXWELL & MOORE, INC.

SHAW-BOX CRANE & HOIST DIVISION

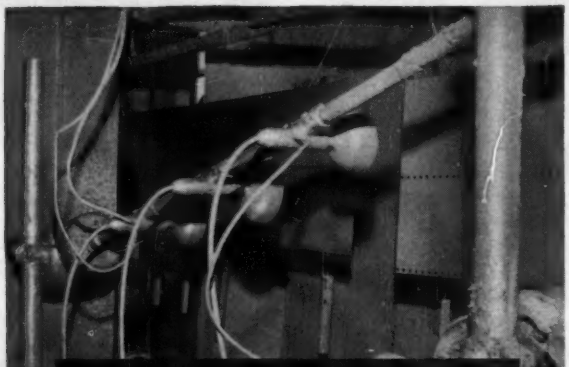
366 W. Broadway • Muskegon, Michigan

Builders of "SHAW-BOX" and 'LOAD LIFTER' Cranes, 'BUDGIT' and 'LOAD LIFTER' Hoists and other lifting specialties. Other Divisions produce 'ASHCROFT' Gauges, 'HANCOCK' Valves, 'CONSOLIDATED' Safety and Relief Valves, 'AMERICAN' and 'AMERICAN-MICROSEN' Industrial Instruments, and Aircraft Products.

In Canada: *Manning, Maxwell & Moore of Canada, Ltd., Avenue Road, Galt, Ontario.*

Circle No. 81 on Reader Service Card for more information

penco—*Equipment "that Wears out Calendars"!*



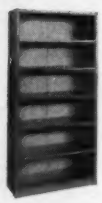
From Start to FINISH Penco Lockers are Perma-Built

Call it a Ransburg unit, if you want to be technical . . . or just "beauty treatment—Penco style." The important fact is that this electrostatic spraying unit is one of the processes that mean finer and better-looking Steel Lockers for your office, plant, school or institution.

Its spraying "bells" use the principle of magnetic attraction between electrified enamel mist and electrified steel. They assure an even coat of enamel to every steel sheet that goes into Penco Lockers, Shelving and Cabinets.

The smooth, lustrous enamel is perfectly and permanently bonded to the phosphate undercoat, enemy of rust. Then, sprayed with gleaming enamel and baked to enduring hardness, Penco lockers reward you with permanent fine appearance as well as sturdy service even under rugged usage.

Want that kind of locker durability in service and appearance? Need special type lockers? Just write for Catalog F-57-1.



And There Are Special Services

Planning—Ask for Penco's free engineering service. Let Penco's experience help you in the selection and arrangement of equipment to do the job.

Dependable Service—As a division of Alan Wood Steel Co., Penco is assured a full supply of high-quality steel.

penco
STEEL LOCKERS
CABINETS · SHELVING

penco METAL PRODUCTS DIVISION
ALAN WOOD STEEL COMPANY
OAKS, PA.

Circle No. 96 on Reader Service Card for more information

CATALOGS

Continued

time when your cartons are sealed by hand. Complete details are available from Rexford Paper Co.

Circle 105 on Reader Service Card

Floor Truck with Superstructure to Hold Load . . . is just one of the "job-suited" trucks described in their latest catalog and is available from Thomas Truck & Caster Co.

Circle 121 on Reader Service Card

You Can Save up to 7c a Gallon . . . in LP-Gas truck operation when you buy and store it in bulk. The engine stays cleaner and requires less maintenance. Downtime is cut by as much as 50%. Yale LP-Gas Trucks are available in capacities from 2,000 to 10,000 pounds. Further information is available from Yale & Towne Mfg. Co.

Circle 135 on Reader Service Card

Complete Line of Casters . . . is described in detail in literature available from Bond Foundry & Machine Co.

Circle 21 on Reader Service Card

Straddle Trucks . . . offering such advantages as superior cab-to-road visibility, four-speed synchromesh transmission, all-welded structural frame, smooth riding, four-wheel power-asisst brakes, etc. are discussed in literature published by Towmotor Corp.

Circle 123 on Reader Service Card

Demountable Truck Bodies . . . are said to offer many new opportunities to reduce the cost of handling materials of all kinds. These detachable steel containers may be raised and lowered by the driver right from the cab of the truck. Full information on the Load Lugger is yours for the asking from Ingersoll Kalamazoo Div., Borg-Warner Corp.

Circle 70 on Reader Service Card

Here's a 10,000-lb lift truck that's Right for the job!

THE NEW

ALLIS-CHALMERS

MODEL FT-100

with EXTRA POWER
PERFORMANCE
RUGGEDNESS

Heavy-duty industrial engine is built *by* Allis-Chalmers specifically *for* lift truck service. This large (230-cu in. displacement) engine provides high torque at normal engine speeds, *gives the truck power enough to carry a full load up a 25-percent grade.* User records show Allis-Chalmers industrial engines not only outperform others, but operate many hours longer before overhaul. Available in diesel, gasoline or LP gas.

Workingest truck in its class. The FT-100 has the extra weight, traction and operator controls for superior performance. Its added weight is well placed to provide stability for heavy loads and high lifts. Excellent traction means extra usefulness, ability to work under adverse conditions. Controls are simple and positioned much like those in a car for easy handling. This new truck has standard ITA "shaft-type" fork mounting which permits using a wide range of attachments.

Outside turning radius: 100 in.
Over-all height: 83 in.; stacking height: 110 in. with standard mast
Width: 52 in.; length (less forks): 107½ in.

Power steering and power shift transmission are available as extra equipment.

Rugged industrial-type frame. Welded construction assures complete alignment of parts for reduced maintenance and longer truck life. New roller-mounted "extra lift" mast provides up to 19 percent higher lift without increasing the over-all lowered height.

The FT-100 has quality construction and functional design that includes unusual accessibility for service and maintenance. Let your Allis-Chalmers material handling dealer tell you more about this 10,000-lb lift truck that's *right for the job.* Send for Bulletin BU-334A.

ALLIS-CHALMERS, MATERIAL HANDLING DEPT., BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

BH-53

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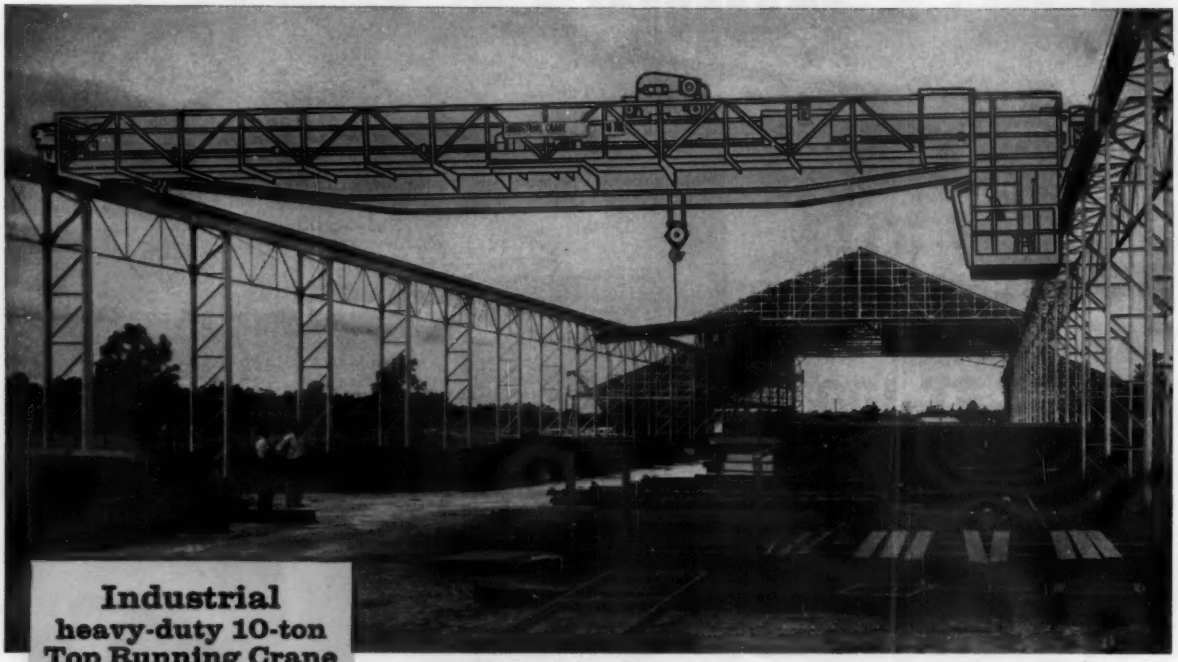
MORE ECONOMICAL HANDLING

at this steel storage yard...



Industrial
heavy-duty 10-ton Top Running Crane

- another in the versatile Industrial line.
- Heavy duty roller bearings throughout.
- Precision machined components.
- Welded box girder construction.
- Rolled forged bridge and trolley wheels.
- Wide choice of hoist controls.
- Full-length walkways and completely decked trolley.
- Full-vision operator's cab.

...thanks to the modern design of this

Industrial

HEAVY-DUTY CRANE

It takes smooth running, ruggedly built equipment to keep steel moving in and out of this yard with minimum effort. That's why this southern warehouse chose **Industrial** after a careful study of all overhead cranes.

Industrial's modern "heavy duty" crane designs incorporating the latest components, plus precision manufacture means better performance, smoother operation and greater overall savings to you.

For your next crane, it will pay you to consult Industrial.

Industrial CRANES

HD8-357C

INDUSTRIAL CRANE & HOIST

INGERSOLL PRODUCTS DIV. BORG-WARNER CORP.

1530 S. PAULINA STREET, CHICAGO 8, ILLINOIS

Export Sales: Borg-Warner International, 36 South Wabash Ave., Chicago 3, Illinois.

Circle No. 138 on Reader Service Card for more information

YALE LP-GAS TRUCK ASSURES EXTRA SAFETY IN CONFINED WAREHOUSE AREAS

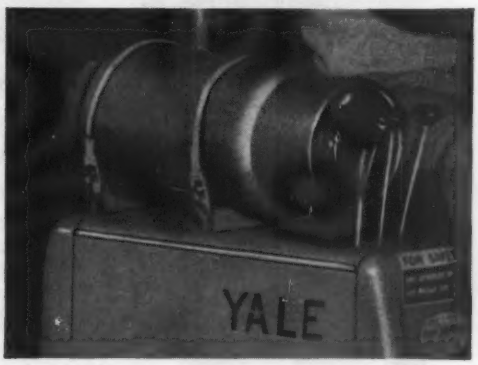
Yale LP-Gas Trucks have been awarded the Underwriters' Laboratories and Factory Mutual approval—your assurance of maximum safety when you must move materials in enclosed areas. Yale LP-Gas Trucks produce no harmful fumes, thus can operate in warehouses, crammed storage rooms or deepfreezes with complete safety for driver as well as odor-absorbing materials. Furthermore, the fuel system of Yale LP-Gas Trucks is completely sealed to eliminate danger from leaks or evaporation... fuel supply is shut off when ignition is turned off.

Yale LP-Gas Trucks are also exceptionally economical to operate because you can save up to 7 cents a gallon when you buy and store LP-gas in bulk. Engine stays cleaner, requires less maintenance...downtime is cut by as much as 50%. Yale LP-Gas Trucks are available in capacities from 2,000 to 10,000 lbs. For full facts, write The Yale & Towne Mfg. Co., Phila. 15, Pa., Dept. A-47

To meet the need of expanding industries for better materials handling methods and equipment, look to Yale for advances in research, engineering, manufacturing, sales, service—as

YALE BUILDS FOR THE NEW ERA

New Yale LP-Gas Conversion Kit—the first with U.L. listing—now permits YOU to convert Yale Gas Trucks you already own into LP-Gas Trucks—and get complete safety approval from local inspectors and authorities. The kit includes all necessary parts and easy-to-follow instructions for proper installation.



YALE* INDUSTRIAL LIFT TRUCKS AND HOISTS

*REG. U. S. PAT. OFF.

Gasoline, Electric & LP-Gas Industrial Lift Trucks • *Worksavers* • Warehousers • Hand Trucks • Hand and Electric Hoists

Circle No. 135 on Reader Service Card for more information

MEN in the NEWS

G. Turner

B. M. Walter

At **Clark Equipment Company** . . . the election of **George Turner** and **Bert M. Walter** as vice presidents has been announced by **George Spatta,** president. Turner is in charge of production operations at Clark's Transmission Division at Jackson, Mich., and Walter is in charge of the company's industrial and labor relations, with headquarters at Buchanan, Mich.

At **Gardner-Denver Company** . . . the election of three new vice presidents has been announced by **Gifford V. Leece,** president. Elected were **George W. Gutekunst, C. H. Rieman** and **Brice D. Maddox.** Gutekunst was named general sales manager in 1954 and continues in this capacity. Rieman was formerly sales manager of mining and construction equipment until transferred to the Denver plant in 1955. He was named general manager of the plant in February of this year. Maddox was appointed general manager of the Keller Tool Division last year and continues in this capacity.

J. Kludt

At **Lincoln Engineering Company, Division of The McNeil Machine & Engineering Company** . . . the board of directors has elected **Jonathan Kludt** executive vice president and general manager. Kludt joined the company in 1934, and soon became vice president in charge of production. In April of 1956, when Lincoln merged with the McNeil organization, he was elected general manager of the Lincoln Division.

T. F. Flood

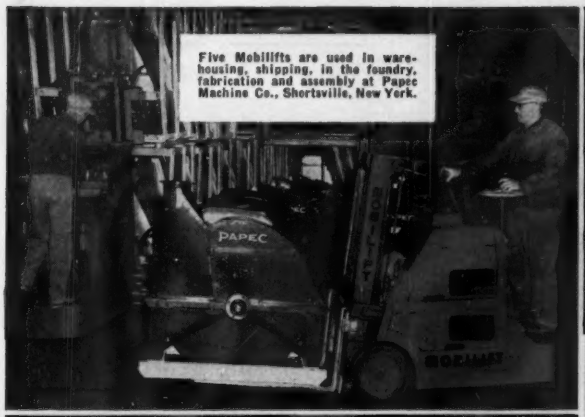
At **The Frank G. Hough Co.** . . . the appointment of **T. F. Flood,** vice president, to the board of directors has been announced by **G. A. Gilbertson,** president. At the same time, he announced that Flood, formerly vice president, production, has been given the additional responsibilities of vice president, sales and manufacturing. Flood started with The Frank G. Hough Co. in 1945 as a clerk in the production control department. He subsequently held the positions of yard stores supervisor, production control manager, production manager and was made vice president, production, in May, 1954.

At **The Cleveland Worm & Gear** and its affiliate, **The Farval Corporation** . . . the election of **George H. Acker** as president and **Howard Dingle** as chairman of the board has been announced. All other officers were re-elected, including **Willis W. Clark,** vice-president. Before his election to the presidency, Acker held the post of executive vice president and Dingle was president. Dingle joined the organization as vice president and general manager and has served as president since 1927. Acker became associated with the company in 1923 and was named chief engineer in 1925. He was appointed vice president in charge of engineering and production in 1942 and became executive vice president in 1952.

A. E. Dorod

At **The Baker-Raulang Co., Alfred E. Dorod,** sales promotion manager, has assumed the additional duties of director of advertising. Dorod has been with Baker-Raulang for 17 years; ten years as assistant chief engineer, three years as consulting engineer to field sales personnel throughout the country, three years as regional sales manager of the South and West Coast and, since February, 1956, sales promotion manager.

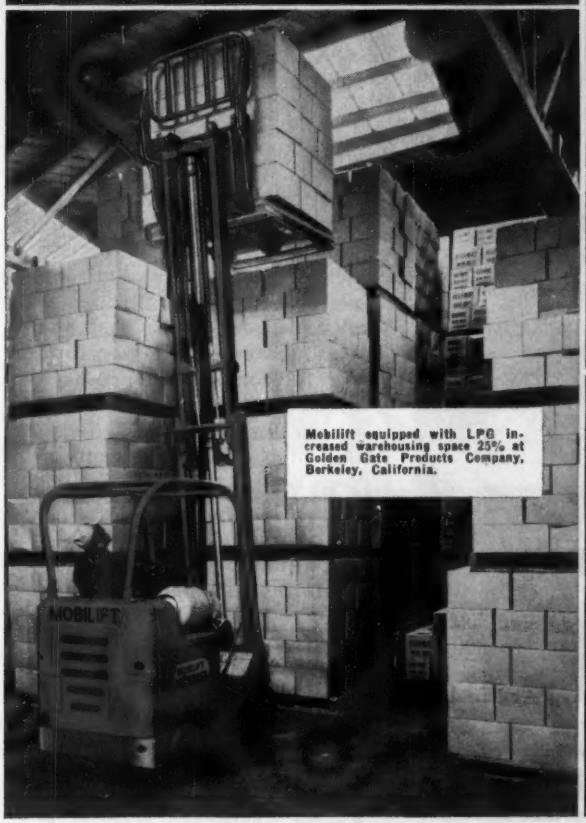
(Continued on page 48)



Five Mobilifts are used in warehousing, shipping, in the foundry, fabrication and assembly at Papec Machine Co., Shortsville, New York.

IN ANY INDUSTRY, FOR ANY JOB MOBILIFTS LOWER OPERATING COSTS

Hydra-Lizer and other features cut handling time per car load of metal lathe 88% at Park Ridge Fuel and Materials Co., Park Ridge, Illinois.



Mobilift equipped with LPG increased warehousing space 25% at Golden Gate Products Company, Berkeley, California.

Two Mobilifts reduced car-loading time 90% at Aetna Waste Paper Co., Chicago, Illinois.

The case histories reported here are typical of many received from Mobilift® users across the country. They all report that Mobilift "Sit-Down" and "Stand-Up" Industrial Trucks help them cut handling costs by lowering operating and maintenance costs to a bare minimum . . . by moving more tonnage per hour per dollar.

Mobilift Trucks, with smooth Mobil-Matic* Drive and fluid coupling, fingertip controls for non-fatiguing operation, high free lift at no extra cost, and exclusive Hydra-Lizer*, a hydraulic equalizing rear suspension system on "Sit-Downs," all add up to higher profit jobs. Mobilifts are available with factory-installed LPG equipment, and attachments for specialized operations. "Stand-Up" models up to 3500 lbs. capacities; "Sit-Down" models up to 5000 lbs. capacities.

FREE TO YOU!

- Mobilift "Sit-Down" Folder on how Mobilift's exclusive features save dollars by increasing efficiency.
- Mobilift "Stand-Up" Folder describing the cost-saving features of the only "Stand-Up" gas-operated truck on the market.

*Trade Mark

LAMSON MOBILIFT CORPORATION
27 Lamson Street, Syracuse 1, New York
Mobilift Sales and Service is Available in 75 Cities Throughout the U. S. and Canada

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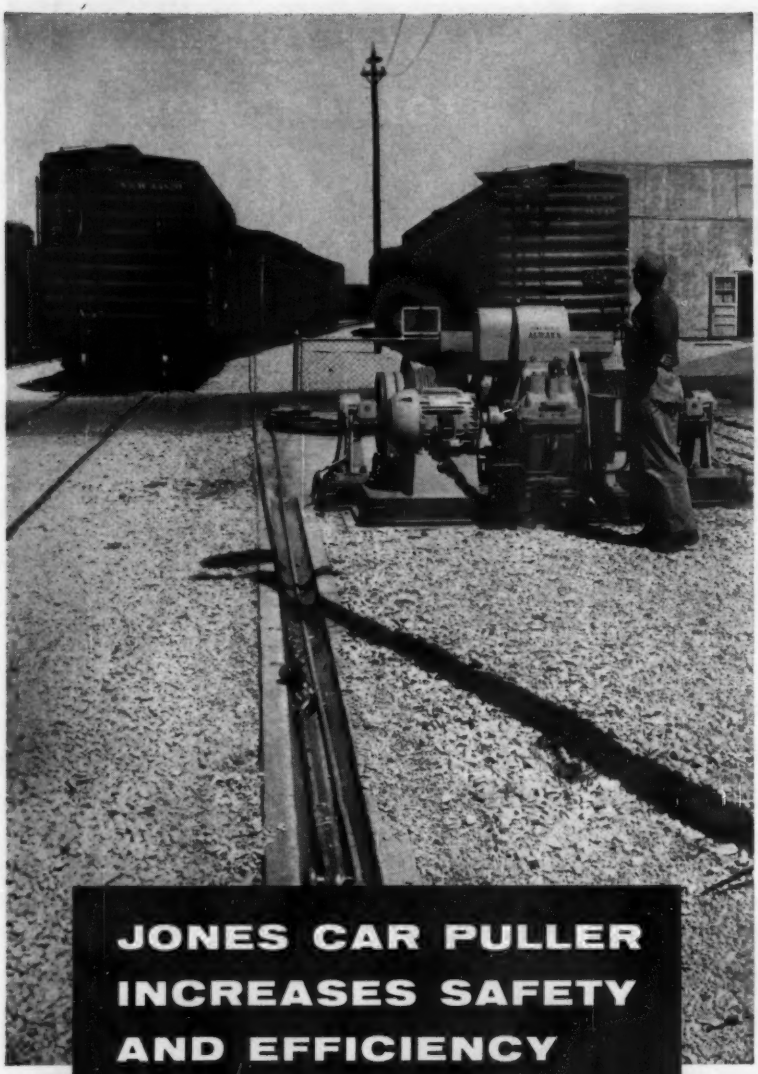

JONES CAR PULLER INCREASES SAFETY AND EFFICIENCY

This Jones two-way car puller has materially increased freight handling efficiency at Corn Products Refining Company's Pekin, Illinois, plant. To move cars on either siding, the operator merely hooks a cable to one of the cars and pushes a button on the control panel. Only a small part of one man's productive time is needed, and the system is both safer and faster than former methods.

The Jones car puller is but one of the many types of Hewitt-Robins equipment for helping industry solve its bulk materials handling problems. To find out how H-R products and services can help you, consult your classified telephone directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Connecticut.

HR HEWITT-ROBINS

CONVEYOR BELTING AND IDLERS . . . POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE . . . VIBRATING CONVEYORS, SCREENS & SHAKEOUTS
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MEN IN THE NEWS

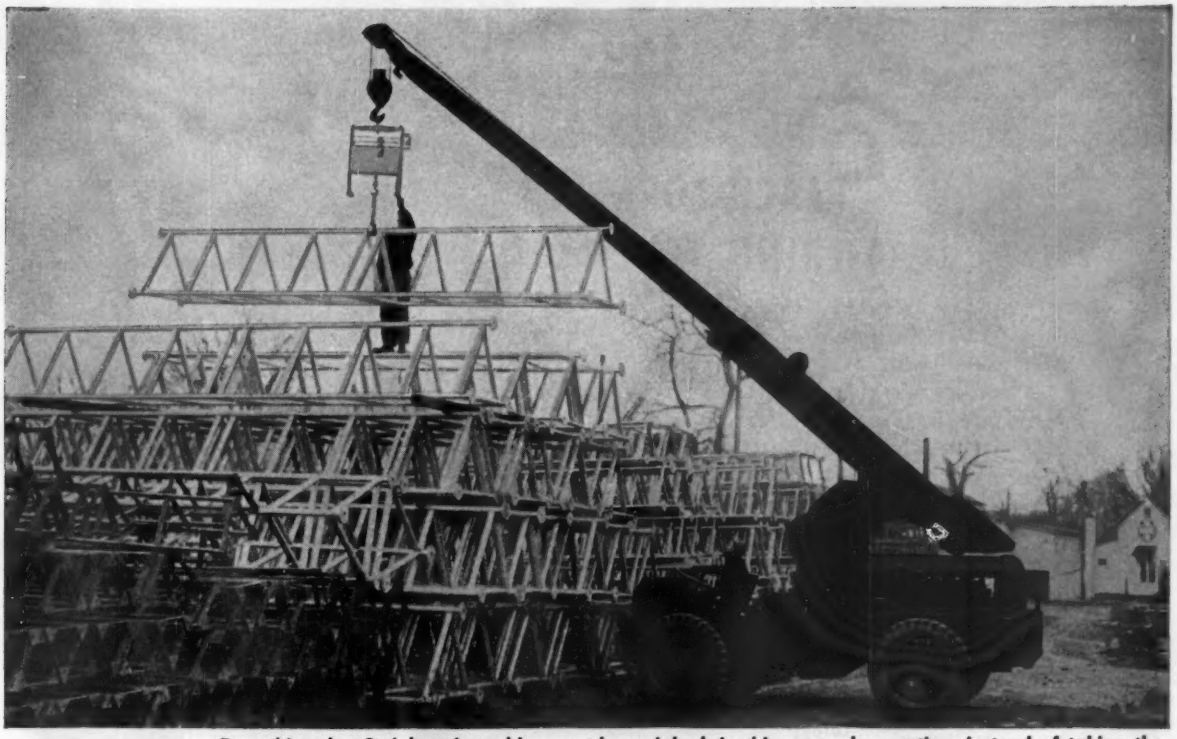
Continued

At **Lewis-Shepard Products, Inc.** . . . the appointments of **Francis E. Cottrell** as director of personnel and **Milton G. Dexter** as supervisor, Cost Accounting Division, has been announced by **F. J. Shepard, Jr.**, treasurer. Cottrell, prior to his appointment, was personnel director for the Waltham Watch Company. Dexter was New England branch sales manager for the Colson Corporation.

At **Greer Hydraulics, Inc.** . . . the stockholders, at the annual meeting, elected **David Fromson,** the company's secretary and counsel, a member of the board of directors. Fromson has been with the Greer organization for the past five years. Prior to his association with the company, he practiced law in New York City and was a professor of law in the evening division of Pace College, New York.

At **Minnesota Mining & Manufacturing Company** . . . the stockholders have elected **Joseph C. Duke** and **Bert S. Cross,** vice presidents of the company, to the board of directors. Addition of Duke and Cross to the board raises the membership to eleven. Re-elected were: **William L. McKnight,** chairman; **Herbert P. Buetow,** president; **Archibald G. Bush, John L. Connolly, John C. Dwan, George H. Halpin, John G. Ordway, Clarence B. Sampair** and **Louis F. Weyand.**

At the **H. K. Porter Company, Pioneer Works, Quaker Rubber Division** . . . the appointment of **James H. Joyner** as general manager and **B. V. Edmunds** as works manager, has been announced by **G. A. Dauphinain,** vice president and general manager. Joyner's du-



Everything that Stainless, Inc., ships must be weighed. In this unusual operation, instead of taking the material to the scale, the A-W crane takes the scale to the material, in this case, sections of TV tower.

AUSTIN-WESTERN HYDRAULIC CRANE

Most versatile tool in shop and yard . . . handles typical loading job in half the time, one-third the cost, reports Stainless, Inc., North Wales, Pa.

In March, 1954, Stainless, Inc., North Wales, Pa., purchased an A-W Hydraulic Crane to assist in its extensive tower-building operations. Stainless reports: "... it can do more different jobs in the shop, yard, and on the road, than any machine with which we have had experience."

Moves heavy machines. The report continues: "Building different size towers often makes it advisable to move one of the four heavy machines in the shop to a more accessible position for the job. Here the A-W has moved a punch weighing over 4 tons and other tools very readily. Also, in the shop this unit unloads trailers and trucks and places the material where it is convenient for the first operation. Sometimes a trailer is in an inaccessible place, but nothing seems beyond the reach of our 24-ft. extensible boom."

A-W does job in half the time. "The kind of loading job that formerly took a gang of six men 2 hours to accomplish at a cost of 12 man-hours, the A-W and its crew now handle in 1 hour at a cost of 4 man-hours. The cost of the crane is approximately as much as that of one man. Adding the operator and 2 helpers makes a total of 4 man-hours. In other words, the job is done with the A-W in half the time and at about one-third the cost."

Travels 30 miles to the job. "We recently built a shop in nearby Pottstown to which we drove the A-W 30 miles over the roads to unload steel and place uprights to simplify the construction job."

Easy to operate. "The hydraulic controls make this unit so easy to operate that any one of five or six men, or the yard foreman, can do it without calling for a special operator."

Low maintenance. "Two and a half years' experience has shown that this unit requires very little maintenance beyond an oil change every 4 to 6 weeks and minor repairs at rare intervals."

For the complete story, write for Gould Certified Report No. 5608.

AUSTIN-WESTERN WORKS
620 Farnsworth Avenue, Aurora, Ill.
Please send complete Gould Certified Report No. 5608.

Name .....
Title .....
Company .....
Street .....
City ..... Zone ..... State .....

AUSTIN-WESTERN WORKS
BALDWIN-LIMA-HAMILTON
Construction Equipment Division
OTHER DIVISIONS: Eddystone • Lima • Electronics & Instrumentation • Hamilton • Loewy-Hydropress • Standard Steel Works • Madsen • Pelton
AURORA, ILLINOIS, U.S.A.

BALDWIN BLH LIMA-HAMILTON

Power Graders • Motor Sweepers • Road Rollers • Hydraulic Cranes

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RAYMOND ELECTRIC TRUCKS

REACH-FORK TIERING TRUCK

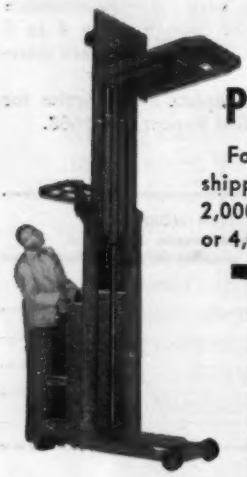
The "Truck with Boarding House Reach" operates in 6' aisles with existing racks and pallets. Forks reach out 24" to pick up or deposit load. Telescopic, Non-telescopic models. Capacities: 2,000 or 3,000 lbs.

STRADDLE TYPE TIERING TRUCK

Right-angle tiers from 6' wide aisles. Increases warehouse capacity up to 50%. Telescopic and Non-telescopic models. Capacities: 2,000; 3,000 or 4,000 lbs.

WALKIE

Operates on 4 auto batteries. Packs twice the power of ordinary walkies—12 volts for normal use, 24 volts for extra power. 3 speeds, exclusive safety control, 4,000 lb. cap.



PLATFORM TIERING TRUCK

For production floor use, plus warehousing and shipping. Stacks in 5' aisles. Telescopic models: 2,000; 3,000 or 4,000 lb. cap. Non-telescopic: 2,000 or 4,000 lb. cap.

The RAYMOND CORPORATION

3327 Madison St., Greene, N.Y.

Please send Bulletins on RAYMOND Electric Trucks checked below:

☐ Straddle Type Tiering Truck ☐ Walkie Electric Truck
☐ Reach-Fork Tiering Truck ☐ Platform Tiering Truck

NAME TITLE

COMPANY

STREET

CITY STATE

Mail this coupon

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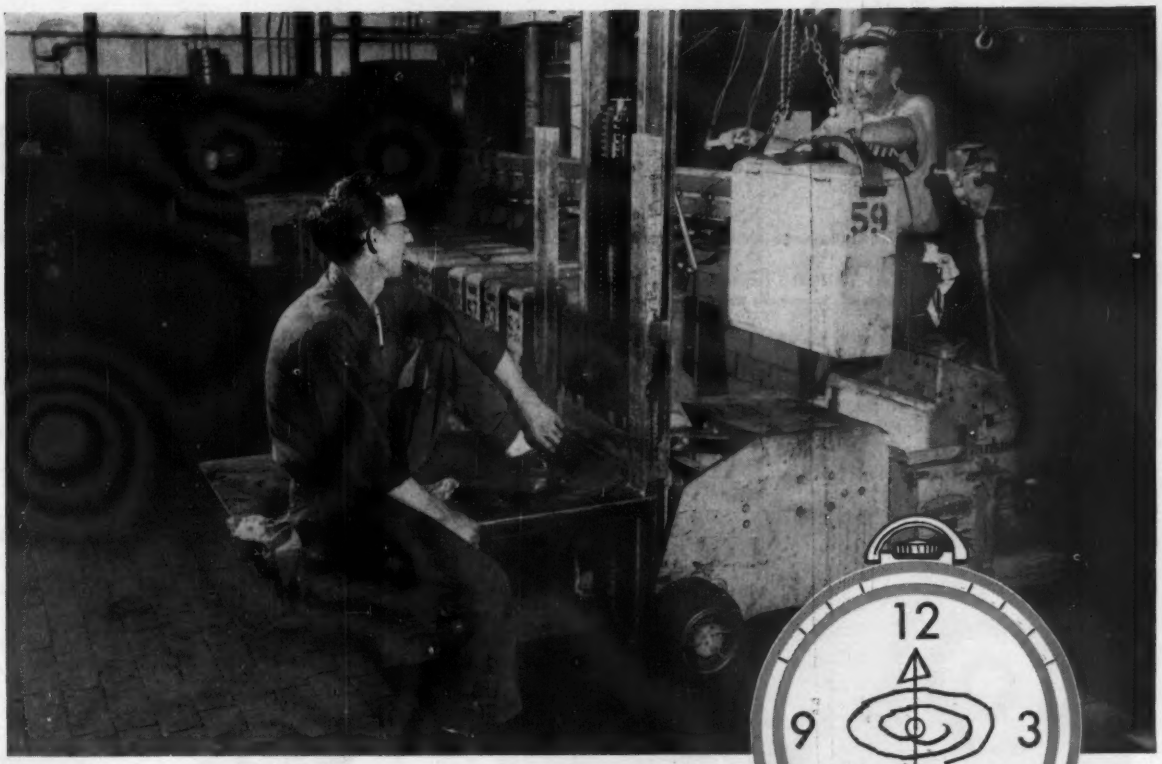
ties will include supervision of accounting, manufacturing, production, general plant operations, and sales. He joined Quaker as a salesman covering South Carolina and eastern Georgia in 1950. He has since set up Quaker branches in both St. Louis and Los Angeles. Edmunds will be responsible for plant operations, which include engineering, manufacturing, production and shipping. He joined Quaker in late 1955 as an industrial engineer.

R. J. Anderson, Jr.

At **Permacel Tape Corporation . . .** The appointment of **Rudolph J. Anderson, Jr.,** as Director of Industrial Products has been announced by G. C. Riegger, President. Permacel is a Johnson & Johnson Company. Anderson has been with Johnson & Johnson since 1954.

At **Allis-Chalmers Manufacturing Co. . . Henry Larsen** succeeds **Owen J. Higgins** as assistant general works manager of the Tractor Group. Higgins was recently appointed general manager of the Harvey, Illinois Works. Since late in 1955 Larsen has been assistant to **John Ernst,** Tractor Group vice president and general works manager. In his new duties he will work with Tractor Group plants located at West Allis, Wis., Springfield and Harvey, Ill., Cedar Rapids, Ia., Gadsden, Ala., Independence, Mo., La Crosse, Wis., La Porte, Ind. and Oxnard, Calif. **Leslie T. Brueggeman** has been appointed supervisory engineer in charge of all engineering in the "Texrope" drive department at the Norwood Works. He has been with Allis-Chalmers since 1936.



Men and Trucks

Work Full Shifts...

completely eliminates

downtime due to run-down truck batteries

New LIFETIME CHARGE will keep your battery-operated trucks working a full shift every day. No more delays or lost production time while your trucks are towed to the charging line.

Several ounces of LIFETIME CHARGE in each battery cell prolong battery use between chargings and lengthen over-all battery life. It keeps batteries nearer to full charge while you are using them, permitting more efficient use of industrial trucks. When you recharge periodically, LIFETIME CHARGE reduces the required charging time.

The great value of LIFETIME CHARGE in electric truck batteries was proven by tests in a large automotive stamping plant. Treated batteries lasted four to five times longer between chargings than untreated batteries. For complete details on LIFETIME CHARGE, write Magnaflo Company, Inc., Central Tower, Youngstown, Ohio, or phone RIverside 4-3557.

a performance test in your plant will prove these statements

MAGNAFLO COMPANY, INC...
CENTRAL TOWER YOUNGSTOWN, OHIO

Circle No. 149 on Reader Service Card for more information

Eaton handles incoming shipments up to 10 REPUBLIC COLLAPSIBLE

PB-127 BOX AND SKID UNITS are collapsed for return to Eaton suppliers. Collapsible feature substantially reduces transportation cost on return shipment of empty boxes.

TIERING FEATURE of Republic Collapsible Boxes allows storing in neat rows. Box and skid design permits easy visual inspection for inventory checks. Boxes of parts are moved quickly and easily to various stations on finishing and assembly lines by fork or platform trucks.

REPUBLIC

REPUBLIC STEEL

World's Widest Range of Standard Steels

times as fast with BOXES

Prominent truck axle maker saves 7 to 10 man-hours per load. Reduces storage space requirements as much as 66%.

Eaton Manufacturing Company's Axle Division was faced with a costly and time-consuming problem of unloading and sorting a variety of suppliers' parts shipped in bulk form via truck. Unloading and handling time was running as high as 7 to 10 man-hours per truck.

Eaton Axle Division Industrial Engineers, after reviewing several types of boxes, decided on the use of Republic's exclusive PB-127 Collapsible Box and Skid Units. Accessories were specifically engineered to Eaton's requirements.

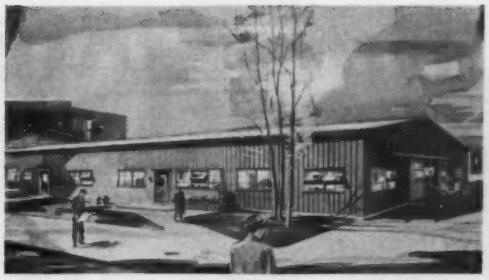
Eaton furnishes its suppliers empty boxes in the collapsed position—the collapsible feature substantially reduces transportation costs on the shipment. The supplier sets up the boxes, fills each with a specific size and type of part and returns them to Eaton. The result? Ten trucks can now be unloaded in the time it formerly took to unload one.

But the saving in time, sorting, and transportation is only part of the story. The PB-127 Collapsible Box is a real space-saver. It's designed to save as much as 66% of the space used by a non-collapsible box. It can be tiered when loaded or empty—collapsed or set up. The PB-127 is built for heavy-duty service. It is a one-piece unit. All parts are permanently attached. A pin and slide bolt arrangement assures positive locking in the set-up position.

Republic Collapsible Steel Boxes are made in a wide range of widths, lengths and heights to meet your requirements. Or if you have a special handling problem, Republic engineers will help you design a unit to fit your plant operation. The coupon will bring you more facts by return mail.

STEEL

and Steel Products



FAST ON-SITE ERECTION with Truscon's new "Budget Buildings". Simplified design brings the cost down low. It's a quality steel building with a tight, dense, galvanized coating that's more rust-resistant than ever. No painting needed. Your "Budget Building" order will be filled fast from off-the-shelf stocks. Immediate delivery in widths of 32, 36, 40, 44 and 48 feet... 12- and 14-foot heights... lengths as long as you want them. Send coupon for details.

SIMPLIFY HANDLING, STACKING AND PALLETIZING of bulky, uneven, odd-lot and fragile materials with Republic Steel Pallets and adjustable Pallet Racks. Tubular steel supports on racks adjust every six inches to handle palletized material of any height. Two-way entry permits loading and unloading from either side. Select single pallets from any level without restacking. Mail coupon for specifications and quotations.

REPUBLIC STEEL CORPORATION
DEPT. C-4230
3196 EAST 45th STREET • CLEVELAND 27, OHIO

☐ Send more information on Republic Collapsible Boxes.
☐ Have a Materials Handling Engineer call.
Send me more facts on:
☐ Truscon "Budget Buildings" ☐ Pallet Racks

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

Circle No. 103 on Reader Service Card for more information

HIGHLIGHTS *of the Month's News*

Possible Link-Belt Plant Site in Georgia

Link-Belt Company has announced the acquisition of 41 acres of land about 11 miles south of Atlanta, Ga., as a possible plant site. No specific plans have yet been made regarding the use of the site which is located on the Central of Georgia Railroad, at the intersection of Morrow Industrial Boulevard and Route 54 in Clayton County.

Porter Acquires Federal Wire & Cable

H. K. Porter Company, Inc. has announced acquisition of Federal Wire & Cable Company, Ltd., according to an announcement by T. M. Evans, Porter's chairman. Federal products include cable for the aluminum, aircraft, automotive and electrical industries. Wire is manufactured for the appliance, building, radio and telephonic industries. Harold F. Nunn, vice president and general manager of Porter's Canadian organization, will move his headquarters from Toronto to Guelph to supervise the new operation. J. Godfrey Smith, founder and president of Federal, will retire but will be available to the new Porter division for consultation. His son, Thomas G. Smith, has been named Federal's general sales manager.

Financing Arrangement for Purchasing Conveyor Equipment

A financing arrangement under which smaller companies will find it easier to obtain conveyor equipment has been initiated by J. C. Corrigan Co. Working through Commercial Credit Corporation, Corrigan offers clients an opportunity to finance the installation of equipment which they might otherwise do without. Some of the advantages of the program are that it does not deplete the client's regular credit line; it can be tied in with his depreciation policies, and the rates are very competitive.

Will Build Aluminum Foil Processing Plant

Kaiser Aluminum & Chemical Corporation has announced that it will build an aluminum foil processing plant at Belpre, Ohio. The plant, to cost in excess of $2-million including equipment, will be erected on a 30-acre site the company has purchased just outside Belpre, which is located across the Ohio River from Parkersburg, West Virginia. Total employment ultimately will be approximately 175 persons. The new Belpre plant will produce a wide variety of aluminum foil-to-paper and foil-to-paperboard laminations for converters, package manufacturers and the tobacco industry. In addition, it will package Kaiser aluminum household, broiler and all-purpose foils for the eastern and middle western consumer markets.

Brummeler Steel Joins MHI

The Brummeler Steel Products Corporation has joined The Material Handling Institute, Inc. As a manufacturer of corrugated metal containers, pallets, skids and racks, the company will be active in the Corrugated Metal Product Section of the Institute. Frank W. Brummeler, president, will be the company's official representative in MHI. MHI membership now totals eighty-one with seventy-one manufacturing and ten associate members.

L-S ELECTRICS FOR LIFT TRUCK SAVINGS

BERKSHIRE PAPERS, INC.
CHICAGO, ILLINOIS
REPORTS

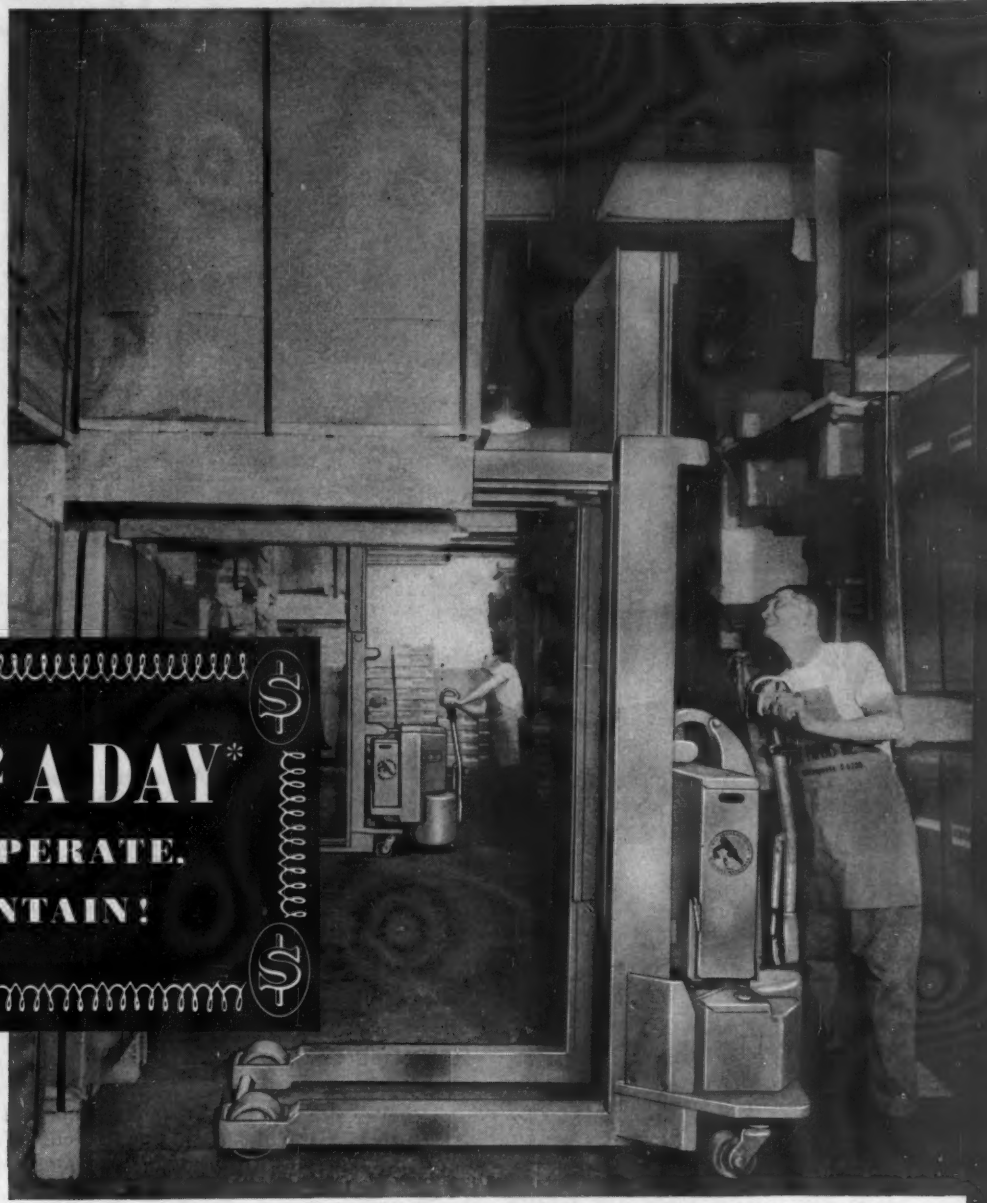
WAREHOUSE CAPACITY
INCREASED . . . **50%**

STOCK HANDLING
DECREASED . . . **50%**

MANPOWER COSTS
REDUCED **40%**

STOCK RECEIVING
TIME DOWN . . . **25%**

PLUS . . .



ONLY $2.82 A DAY*
TO OWN, OPERATE, AND MAINTAIN!

*Based on 5-year average of equipment, operating, and maintenance cost

When Berkshire Papers, Inc. of Chicago turned to narrow-aisle, high-tiering Lewis-Shepard JackStackers the results were immediate and phenomenal. But even more amazing than solving so many problems, L-S JackStacker "Walkie" Electrics cost Berkshire Papers only *$2.82 per day per truck to own, operate, and maintain.*

Clean, silent, fumeless operation makes L-S electrics ideal for warehouse work. Exclusive "lubricated for life" design, and no under-truck adjustments, push maintenance costs down. But topping everything else, you get an extremely rugged, highly maneuverable truck that right-angle stacks 48" loads in aisles less than 6'0" wide. Lift heights to 180". Capacities to 6000 lbs.

Face tight aisle space, plus the need for *exceptionally* high stacking? Inquire about *low-cost* L-S JackStacker "walkie" models. Available in straddle pallet, platform and counter-balance models.

Here's a list of important companies that have recently re-ordered L-S JackStackers:

Aircraft Mfgr.	has 20 L-S in use	reordered 4
Electrical Mfgr.	has 121 L-S in use	reordered 8
Automotive Parts Mfgr. . . .	has 32 L-S in use	reordered 5
Rubber Goods Mfgr.	has 18 L-S in use	reordered 3
Photographic Supplies Mfgr. . .	has 44 L-S in use	reordered 2

L-S LEWIS-SHEPARD®
The most complete line of materials handling equipment anywhere

137 Walnut Street, Watertown 72, Mass.

The "MASTER" Line

Please send ☐ *L-S JackStacker Catalog No. 34-1*
☐ *L-S Complete Line Catalog*

Name.....

Company.....**Title**.....

Address.....

Circle No. 78 on Reader Service Card for more information

Continued

Another Merger

The Borne Company, Covington, Kentucky, has joined its manufacturing facilities with the engineering laboratories of Dynex Corporation, according to H. C. Borne, president. This will expand Borne's operations to include the production of electric motorized power units.

New Plant For Link-Belt

Link-Belt Company will build a new $5 million bearing plant in Indianapolis to replace and increase by 50 percent the capacity of its present Dodge bearing plant, announces Robert S. Becherer, president. Construction will begin this year and is expected to be completed next year. Full production of anti-friction bearings at the new plant is expected in 1959. The new bearing plant is the second Link-Belt expansion in Indianapolis within a year. A new malleable iron foundry at the Ewart plant is expected to be completed before the end of the year.

Con Diesel Acquires Lima Electric Motor

Consolidated Diesel Electric Corporation has acquired, by a wholly-owned subsidiary, the business and assets of The Lima Electric Motor Company, Lima, Ohio. Announcement was made by Norman I. Schafler, Con Diesel president. The Lima business will be operated by The Lima Electric Motor Co., Inc., a wholly-owned Con Diesel subsidiary. Wayne M. Gideon, a vice president of the predecessor firm, has been appointed executive vice president and general manager of the subsidiary.

British Industrial Truck Association

British industrial truck manufacturers have created a new Association to be known as the "British Industrial Truck Association. Since 1942 promotion of the overall progress of the manufacturers as a body, rested in the Industrial Truck Manufacturers' Association. The new group was created to widen the scope of the older Association, and as a contribution to the industry's objective of looking to the future. John M. Morris, Sales Director, Coventry Climax Engines Limited, Coventry, has been elected the first president. Association headquarters will be at 94/98, Petty France, London. S.W.1.

Inland Container To Manufacture in Texas

Inland Container Corporation, Indianapolis, has announced plans for a new corrugated box plant and warehouse in Dallas. The plant is nearing completion and is expected to be in operation about July 15. It will be equipped to manufacture corrugated shipping containers for all types of products required to service industries in the area.

Penco Metal to Move

Operations in the new plant of Penco Metal Products, now under construction at Oaks, Pennsylvania, are expected to get underway early in July. J. Bremner Proctor, general manager of Penco, a division of Alan Wood Steel Company of Conshohocken, points out that the plant will cost more than $2 million and will have 154,000 square feet of air-conditioned office and manufacturing space. It will be equipped to produce three to four times the number of lockers, cabinets and shelving now produced at the Philadelphia plant.

MonoRail Adds Space

A $1 million plant expansion has been authorized by directors of The American MonoRail Company. Plans call for an additional 85,000 square feet, and the project is scheduled for completion in 1958. It will permit consolidation of all the company's manufacturing operations in one plant, whereas two plants are now operated.

10,000 hours . . . only $700 repair costs

Work record of first Michigan Tractor Shovel important since today's Michigans have same basic power train design

When the first Michigan Model 75A Tractor Shovel rolled out of Clark's Benton Harbor (Michigan) plant in 1954, company engineers *knew* it was good. But who could expect it to put in 10,000 working hours on a tough job . . . and still be "good enough to last many, many more years," (according to the satisfied owners, Indiana Farm Bureau's Indianapolis fertilizer plant). Five months a year, their "old" 1¼-yard Michigan Tractor Shovel operates on *a three-shift basis*—moving an average of 60,000 pounds of superphosphate and other materials *per hour* from storage piles to mixing units. It also handles mixed fertilizer, cleans spillage, and pushes freight cars.

Still has original tires, axles

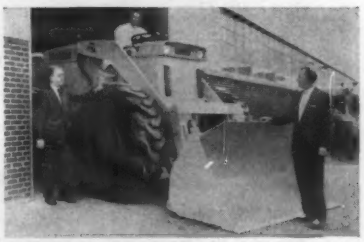
In service equivalent to 5 years' normal 8-hour-a-day use, replacement parts have cost only $700, according to Lewis Risinger, Master Mechanic. "And," he says, "we've *never broken an axle, or replaced a tire,* which is unusual in our operation. I need only three socket wrenches to take the whole power-train apart—it's a fast, simple job that sure cuts downtime."

Operator praises power shift transmission

"I've noticed," says Plant Supt., Melvin Leach, "that whenever there's a choice, operators always pick the Michigan. Even a new man learns to operate it in a hurry." Operator Bob Jefferson especially likes the "power shift and steer, the bucket action, and the fact you don't have to 'grind' gears and wheels to keep close to the pile."

Liked the first—bought four more

Since he authorized purchase of this first Michigan Tractor Shovel, Ben Scharrer, head of the Bureau's Fertilizer Division, has bought four more Michigans for Bureau plants in Indianapolis and Jefferson, Indiana. "One of the things I've been pleased to see," says Mr. Scharrer, "is that there have been no changes in the basic Michigan design. Except for natural wear, the first Michigan is as up-to-date as machines coming off the line today!"



6000th MICHIGAN NOW ON THE JOB

Michigan Tractor Shovel No. 6,000 —produced a little over two years after the first one—is now at work for Ohio Gravel Co., Cincinnati. It has the same all-Clark "flywheel to drive-wheel" power train as do the first and all other Michigan Tractor Shovels.

Michigan is a registered trade-mark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2445 Pipestone Road
Benton Harbor 18, Michigan

In Canada: Canadian Clark, Ltd., St. Thomas, Ontario

CLARK® EQUIPMENT

Circle 32 on Reader Service Card

(Advertisement)

TIPS ON TRUCKS

Electric trucks give clean, quiet, safe operation

In critical warehousing operations, certainly, the arguments in favor of "going electric" are numerous. Even if you consider just a few—say cleanliness, quiet operation, and safety, the balance is way in favor of the battery-operated truck.

Clean? No worry about fumes, objectionable odors, oil drip, when you run electrics.

Quiet? You can hardly hear electrics glide by. Here's smooth, silent power . . . no noise problems for workers.

Safety? Consider the absence of carbon monoxide, minimum fire and explosion hazards.

Makes quite a case for electrics!

Look to the power source ... the extra-capacity battery

Just as there is a big difference between types of trucks, so is there a big difference between batteries.

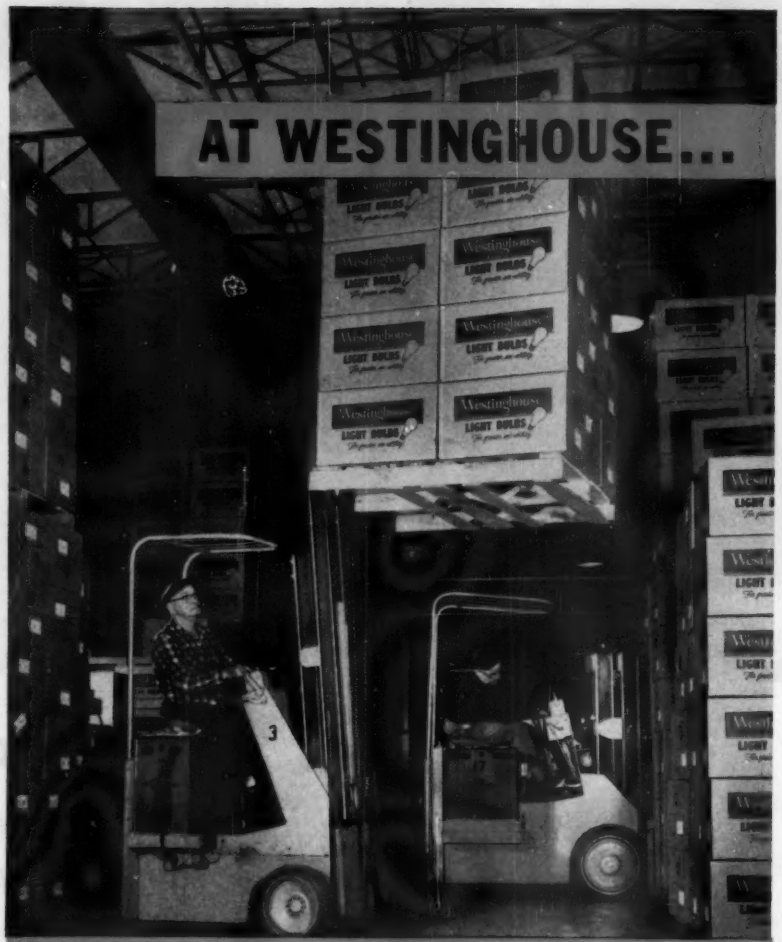
Wherever electric trucks are powered by modern, advanced-design C & D *Slyver-Clad* batteries, companies are able to get the most out of their trucks. Here is the best power package available today. Plates are longer, heavier, designed so as to eliminate "shedding" —thus prolonging battery life. In addition, all C&D *Slyver-Clad* batteries are now equipped with new Hi-Impac cell covers and containers. Truck downtime due to cell cover or container breakage is virtually eliminated.

(It will pay you to check on electric trucks powered by C & D batteries. Just send for the literature offered in advertisement at right.)

Match best with best

...the best in trucks—*electric*

...with the best in batteries—C & D



Modern 260,000 square-foot Westinghouse light bulb warehouse, Trenton, N.J.

Move a million bulbs a day; electric trucks silent, safe, sure

Trucks all electric ... powered by C & D

"You can be *sure* ... if it's Westinghouse." And you can be sure Westinghouse is geared for peak-efficiency operation in its modern Trenton, N.J., Lamp Division Shipping Centre—largest warehouse in the country for the storage of electric light bulbs.

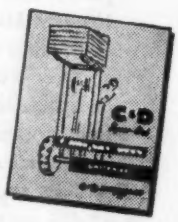
Moving *in* and moving *out* a *million* light bulbs a day at this strategic distribution center calls for a large fleet of fork-lift trucks. Trucks are efficient, clean, quiet. They're all *battery-electric* . . . have been for the past 10 years. And powered by C&D *Slyver-Clad*® batteries, the trucks not only run a full shift without recharging—they often work 10 to 11 hours at a stretch—thanks to C&D's extra capacity.

Westinghouse, too, uses C & D!

It pays to see why "C & D is a better battery buy"

See how C & D's advanced principles of design and extra battery capacity cut material handling costs . . . give your trucks a power boost.

Write for descriptive bulletins.



C&D

BATTERIES, INC.

of Conshohocken, Pa.

SINCE 1906

Sales and service offices in principal cities from coast to coast

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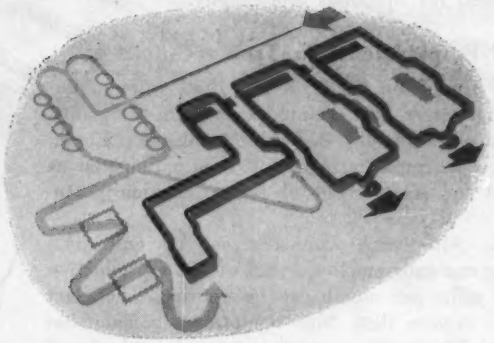
Here's how to design an original flow system so that future production increases can be achieved with practically no additional construction expense.



4-in-1 Production Line

HOW EXPANDABILITY can be built into a conveyor system is shown in a new assembly operation of a western manufacturer.

Although the system, in its initial operation, is functioning as a single assembly line—with a second available for production overflow—the layout is so planned that it can be converted, with minimum modification, into a four-line flow.

The system is also noteworthy because it was built into an area formerly intended for office work. In other words, a relatively weak-walled, thin-floored structure had to be converted for a heavy manufacturing operation.

The installation was made by the Garrett Corporation's AiResearch Industrial Division, Los Angeles, for the production of high-precision turbchargers for diesel engines. Designed by G. S. Williamson, a former machinist, now a Garrett Corp. vice-president and manager of the Industrial Division, the plan is attracting the attention of other manufacturers. A Los Angeles aluminum foundry has already adopted the system.

These are the attention-getters:

1. Four production lines inherent in the original installation of one.
2. Total employment of 150, including engineering and administrative personnel, for current monthly production of 700 turbochargers—with only six men required for final assembly.

(More on next page)

G. S. WILLIAMSON designed shop and assembly system to meet potential demands for greater output at little cost.

3. An upward revision of 166 percent over the original estimates of the plant's production potential.
4. Forty percent reduction in estimates of manpower required for optimum productivity.

Double Employment To Treble Output

When production began in mid-1956, with an initial output target of 550 units per month, the plant's potential was estimated to be 1500 units per month. A plant-wide employment of 500 was anticipated as the need for achievement of full production potential.

Today, AiResearch estimates that by only doubling the currently-employed staff of 150 a production of 4000 units per month can be realized. The plant manager reports that, "our operating efficiency has improved 38 percent since the start of production."

Originally the newly designed plan was considered something of a gamble. The building itself was one reason. Another was the departure from the conventional way in which facilities for mass production of high-precision equipment were devised. As a result of the flow planning, the shop and asembly line systems were unique and had received no prior practical test.

From Office Space To Heavy Production

Previously, the building had been occupied by a Garrett engineering staff, which had been moved to new quarters. About the only inducement the structure offered for manufacturing was an expansive, trussed-roof, open area, which had been occupied by close-packed rows of drafting boards and engineering desks.

The roof wouldn't support an overhead conveyor line. The rubber-tiled slag floor wouldn't support heavy shop equipment.

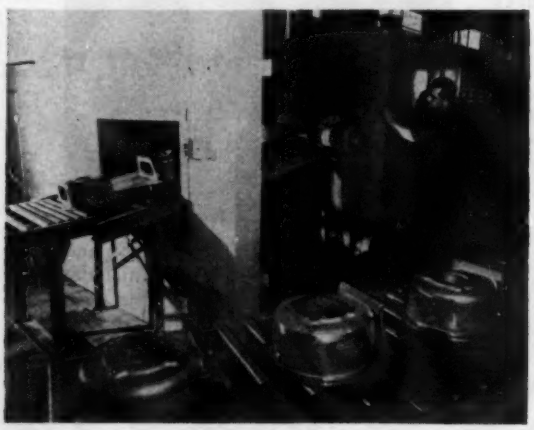
With the asstistance of J. B. Seage Company, a Los Angeles industrial engineering firm, the structure was modified, fully equipped, and ready for production within three months from the starting day.

Steel uprights bolted to the slab floor supported the conveyor system. Shop equipment rested on concrete foundations poured through openings cut in the original flooring. Employees arriving to man the machines and assembly line found themselves occupying the only factory of record equipped with a green rubber-tile floor—which, incidentally, shows little wear and is easily swept to maintain an unusually clean work area.

Mechanization From Beginning To End

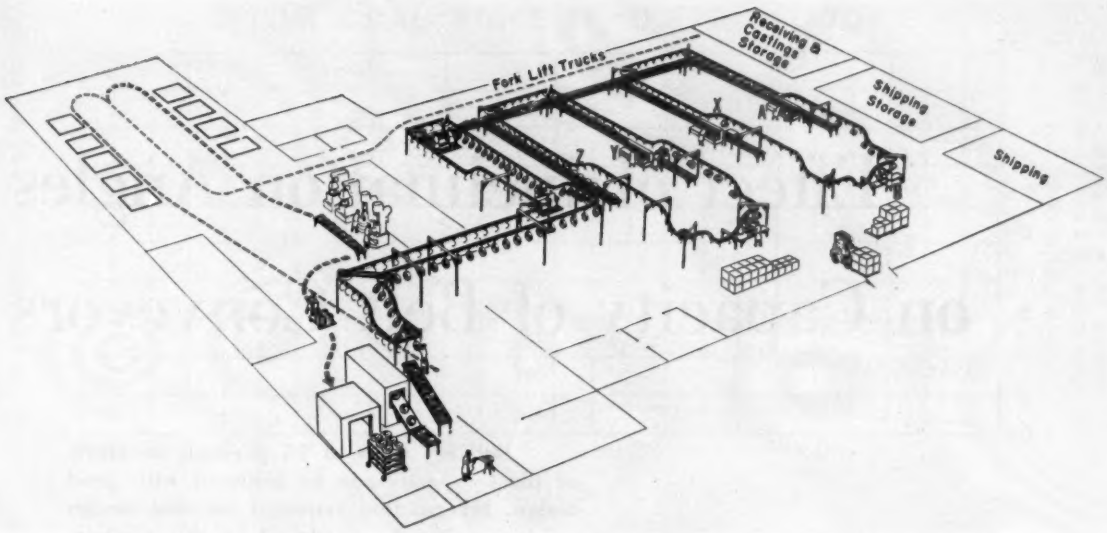
Castings and raw stock held in vertical storage on steel pallets are carried by fork truck into the shop area for distribution—form a center aisle—to heavy and light machining equipment. Heavy work progresses down one side of the shop area and light down the other. Some of the heavy castings advance on roller conveyors. Pallet trucks, with each pallet marked for the item it is to receive, move smaller machined com-

FROM STORAGE, castings and raw stock are fork-trucked to shop area for distribution from center aisle.



AFTER SHOP cycle, heavy castings are conveyed through washer & dryer, then to No. 1 overhead line.

AT PRIMARY ASSEMBLY, castings brought by overhead line are assembled on pallets on bench conveyor.



EXPANDABLE SYSTEM with overhead lines, in black, and roller conveyors in color. Additional operations to be in areas X, Y, and Z. Packaging at loop of overhead lines Z and Y will serve when needed.

ponents. (This marking of the pallet offers a quick check on shortages or parts-to-come).

At the completion of the shop cycle, small finished parts, moving on their pallets, go directly to the assembly area. Heavy castings go through an automatic washer and dryer, to an aluminum-paint spray booth, through a bake oven, to cooling racks. From these they are lifted to hooks of the first assembly conveyor, shown as Line 1.

This feeds to Line 2, where assemblers work before a waist-high roller conveyor to palletize the assembly of the torus, main housing, and compressor components. Here is the only man-lift of heavy parts required in the entire assembly operation. Workers at Line 2 lift the components from pallets and from conveyor hooks of Line 1, as it lowers loads to shoulder-height.

Under present production schedules, the assembled turbocharger shells ride the roller conveyor to the final assembly point, "A", of Line 3. Here, the work pallets are slid off the conveyor to a bench section where the final assembly, insertion of the rotating cartridge, takes place. The completed unit, after final inspection, is elevated on a hydraulic hoist so that it may be engaged by an overhead conveyor hook. After a short ride, it swings down at point "B", to be received in awaiting shipping carton. Here, the packer has only to unfold and set up cartons, position each to receive a completed turbocharger, and disengage the conveyor hook when the unit has been boxed. Boxed units slide on short roller conveyor while unhooking from the conveyor. The packaging atten-

(Continued on page 124)

COMPLETED turbocharger, in final assembly, raised by hydraulic hoist to engage overhead conveyor hook.

PACKAGING by overhead conveyor which swings unit into corrugated box held open by shipping attendant.

Effect of Inclination Angles on Capacity of Belt Conveyors

Delivery rates at 95 percent, or more, of ideal capacity can be achieved with good design. Information required for that design can be produced by this method.

TRANSPORTATION of bulk materials between different elevations, from one piece of equipment to another, and within spaces of definite limitations frequently involve multiple problems. Vertical angles of inclination require careful consideration. Generally, for angles up to 25 deg., a smooth belt may be used. Steeper angles may require apron type or flight conveyors. The bucket type does for angles up to 90 deg.

The smooth belt conveyor is apt to be the most sharply limited and troublesome in use on angles of inclination of, say, 15 to 27 deg., depending upon the materials. And if these angles are exceeded by even a trifling amount, the delivery capacity may drop rapidly—as much as 30 to 50 percent for a single degree.

This limiting angle of a smooth belt conveyor and exactly how the capacity varies with a change in the angle of belt inclination seemed obscure. There is not too much information available. For materials sufficiently dense so that the retarding effect of the motion through air may be neglected, the principal variables may be written as follows:

- S = Belt speed, ft. per sec.
- Sc = Maximum belt speed, which gives maximum discharge.
- L = Length of travel of material from its entry on belt to discharge end of belt, in ft.
- W = Unit weight of materials, in lb. per cu. ft.
- θ = Angle of inclination of belt from horizontal, in Deg.
- a = Acceleration, in ft. per sec. per sec.
- A = Mean area of cross section of material on belt, in sq. ft.
- f = Overall effective coefficient of friction.
- C = Percent of ideal discharge capacity.
- Q = Actual discharge capacity, cu. ft. per sec.

By K. L. Leffler and W. A. Thomas

The Rust Engineering Co., Pittsburgh, Pa.

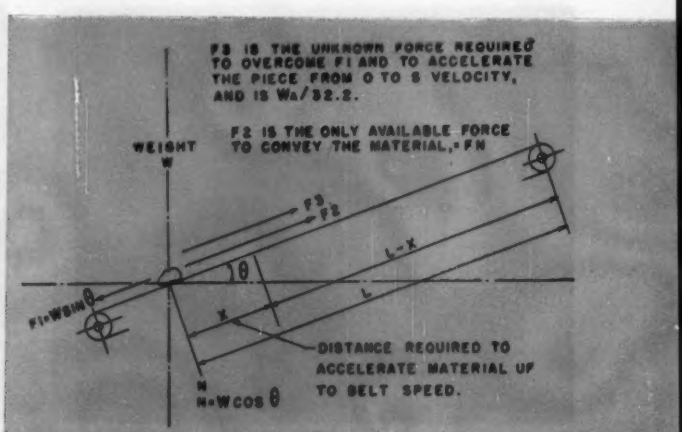

F3 IS THE UNKNOWN FORCE REQUIRED TO OVERCOME F1 AND TO ACCELERATE THE PIECE FROM 0 TO S VELOCITY, AND IS Wa/32.2.
F2 IS THE ONLY AVAILABLE FORCE TO CONVEY THE MATERIAL, = FN
WEIGHT W
F3
F2
L-X
θ
L
X
F1=WSINθ
DISTANCE REQUIRED TO ACCELERATE MATERIAL UP TO BELT SPEED.
N
N=WCOS θ

Fig. 1: Factors upon which equations are developed to calculate critical angle, percentage of discharge.

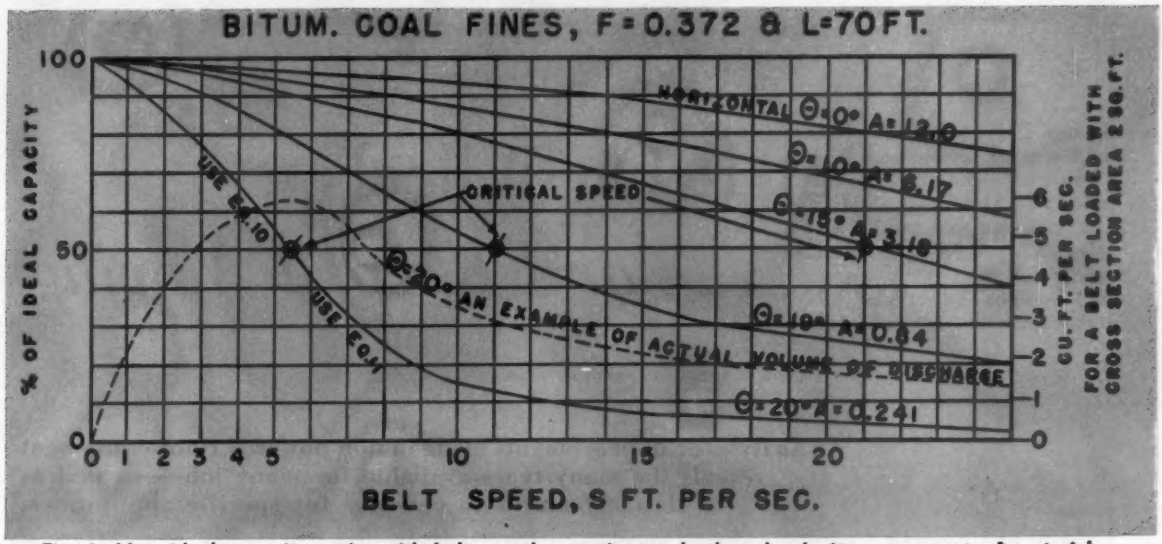


Fig. 2: How ideal capacity varies with belt speed assuming no backward velocity component of material.

V_1 = Component of initial velocity of the material parallel to the belt, in ft. per sec.

We do not initially assign to f the usual tabulated value, coefficient of sliding friction of the material upon the belt. The material when dropped upon the belt undergoes acceleration from V_1 velocity to full belt velocity through a distance x ft. that depends upon the belt speed and the value of f. It has been observed that, usually, the material both tumbles and slides along this distance x before belt speed is attained. In fact, if the belt speed is increased, the distance x becomes greater, and the combined slipping and tumbling action of the material in the region x is more pronounced and noticeable. With high enough belt speed, x may be the full length travel, L, or even longer.

We first make an analysis to find the relation between the variables. Then we may apply the resulting equations to tested cases and thereby come up with commercially useful values of f—which we regard as the discharge capacity factor or overall effective coefficient of combined tumbling and sliding friction. We may, in this way, determine the critical angle and the percentage discharge effects as we approach the critical angle. We define this angle to be that at which no material is delivered—because it slides back down as fast as it is received by the belt.

For the purpose of this analysis, we focus our attention upon a single piece of the material and detail the action of the belt upon it. In this easy way we arrive at equations describing the behavior of the material as a whole.

Regardless of the power driving the belt, the only force available for conveying the piece is the friction

(Continued on page 146)

TABLE 1

Illustrating How S and L Affect Capacity

Bit. Coal Fines f = .372 (Initial Velocity $V_1 = 0$)

θ	a	S=2FPS			S=5FPS		
Deg	FPSPS	L=20'	L=70'	L=700'	L=20'	L=70'	L=700'
19°	.840	89%	97%	99.5%	57%	87%	97.5%
*20°	.241	70%	89%	99.0%	19%	57.5%	93%
21°	0	0	0	0	0	0	0

Wood Chips f = .530 (Initial Velocity $V_1 = 0$)

θ	a	S=2FPS			S=5FPS		
Deg	FPSPS	L=20'	L=70'	L=700'	L=20'	L=70'	L=700'
26°	1.224	92.5%	97.5%	99.7%	67%	87%	98.5%
*27°	.586	85.5%	95%	99.5%	74%	77%	97%
28°	0	0	0	0	0	0	0

*Max. recommended angle

Put It On Wheels
..... *and Keep It Moving*

An analysis of improvements made in non-powered floor equipment reveals the many types available for many jobs—as well as design features to consider for specific applications.

By Robert R. Lippert, Project Engineer
The Hamilton Caster & Mfg. Co.

UNPRECEDENTED EMPHASIS is being placed on progress today—progress in materials, methods, machines and products. Actually, what *is* progress? An evaluation of progress is not of historical interest alone. It is also a guide to determine whether a firm is taking full advantage of advances in designs and applications techniques.

Here, we will examine the development of non-powered floor equipment from about 1900 to the present. We'll review a few of the important milestones passed during that period, and point out some of the great contributions made to industry and commerce by this type of product. And, we'll cover the characteristics which have been developed to meet expanding needs for easier, safer and faster material handling.

Men with many years of experience in design and construction of non-powered floor equipment were asked:

"Throughout your years in this field, what technological developments contributed most to the improvement of casters, wheels and floor trucks?"

At least one of the following three answers was given in each reply:

1. Commercial anti-friction bearings.
2. The technology of welding.
3. Rubber tires.

Other factors also were suggested, and these will be discussed later. However, anyone who questions the powerful influence of the above developments needs only to examine any manufacturer's current caster or floor truck catalog. There he'll find evidence that bearings, welding and rubber tires are basic fundamentals in the contemporary design of these products.

Robert R. Lippert

Many years ago, most industrial wheels were bored to rotate directly on an axle. A refinement of this basic construction had floating axles which revolved in axle hangers. At the turn of the century, some manufacturers began to substitute rolling friction for sliding friction, so that loads could be moved more easily.

This was done by inserting loose steel rollers between the axle and the inside of the hub of the wheel. Because the rollers were loose, they caused many headaches for manufacturing and maintenance personnel. Anyone familiar with them readily appreciates why commercial cage-type roller bearings became an immediate success when they were introduced. They were simple to install and replace, were completely self-contained and were precision made and hardened for long life. Over the years, ball bearings, needle bearings and tapered roller bearings also became popular.

Early factory trucks were built almost entirely of wood. What ironwork there was consisted chiefly of cast or fabricated braces, handles, axles and stake pockets which were riveted or bolted to the framework. Some metal parts were even forged by hand. Therefore, trucks with shelves, box sides and similar superstructures were heavy and bulky.

All this changed when electric arc

PROGRESS IN CASTERS can be seen by comparing the new type at left with an early model at its right. Note the slotted bolt holes, grease fittings, bolted axle and modern design of today's caster —compared with riveted axle, machined rollers and awkward appearance of the old-style caster.

welding came into its own in the early 'thirties. Today, angles, channels, T-iron, pipe and sheet metal are sheared, punched, formed, bent and welded into all types of truck parts—in fact, into complete trucks as well. All-metal two-wheel, shelf and box trucks are widely used, and many trucks with wooden platforms feature steel frames.

However, let us not relegate the wood frame platform truck to the trash heap. The basic wood frame platform truck with simple superstructures like stakes or racks is still popular and reliable, with many uses. Actually, it is quieter in operation, has greater resiliency against shocks and is more economical to repair. It has been principally on superstructure trucks which require shelves, box sides, etc., that much of the wood framework has been replaced with metal.

Welding also has benefitted caster manufacturers. It's possible to fabricate an entire series of casters which use the same basic mounting plate and horn plate. By welding different pairs of legs to the horn plate, a variety of wheel sizes can be accommodated to produce a complete size range of casters. The offset also can be varied by this method to assure optimum swiveling action for whatever type of wheel is used. (A given caster with a fixed offset will have different swiveling action when equipped wih a metal wheel than with a rubber-tired wheel.)

Rubber Tires

In the early 1900's, most casters and floor trucks were equipped with cast, semi-steel wheels. The semi-steel wheel is relatively inexpensive and still performs adequately in many applications. In fact, with good suspension, semi-steel wheels (and plastics, too) roll and turn easier than rubber-tired wheels.

But, for prolonged floor and equipment life, quiet operation, ease of movement over obstructions, and cargo protection, the rubber-tired wheel is taking over. Molded-on rubber tires came into prominence about 20 years ago, and World War II added impetus to their increase in popularity. These wheels can have

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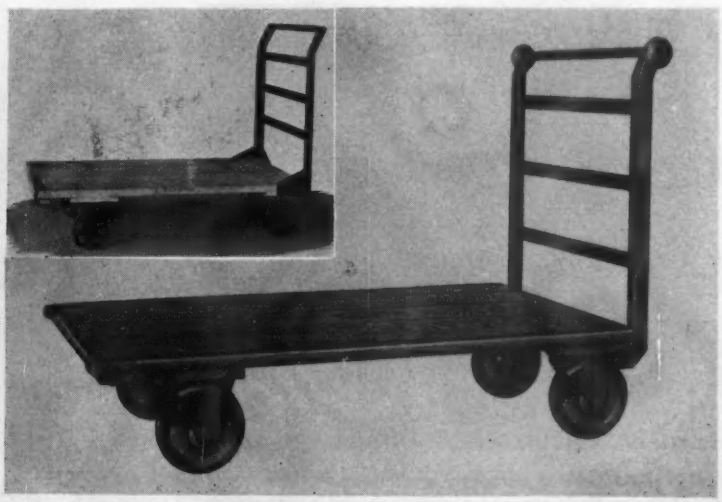
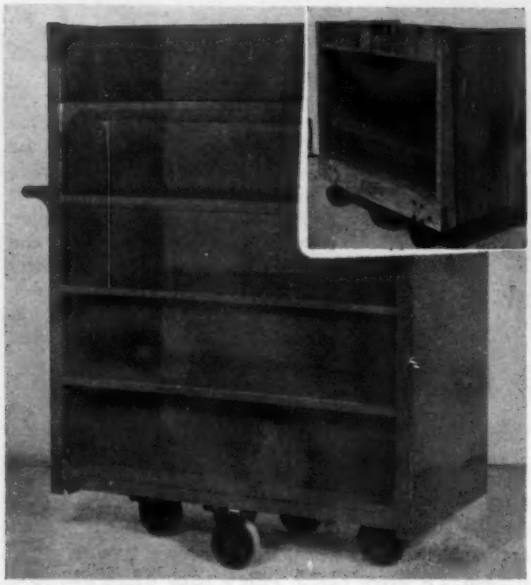
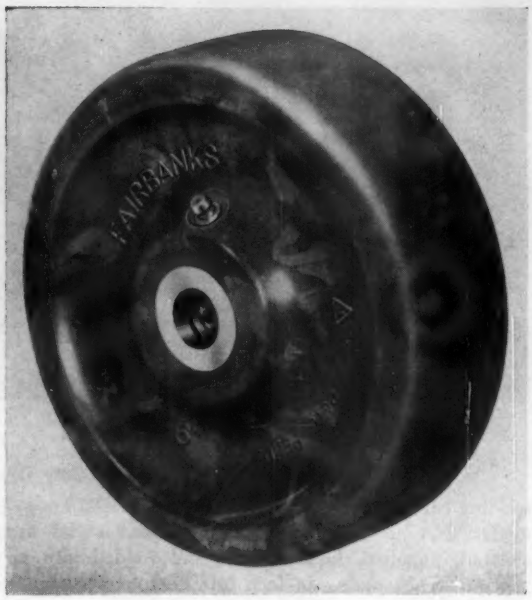


FLOOR TRUCKS have come a long way since the model shown in the inset was the latest style, with its all-wood platform and unwieldy end rack. Cotter pins retained axles in the casters, and outmoded alemite fittings provided lubrication. In contrast, today's typical truck has a steel frame, quiet-running rubber-tired wheels and stronger, lighter superstructure which is available in a wide variety of types and styles.



LIGHT, STRONG shelf truck typifies progress from welding. Note old, heavy, bulky wood truck in inset.



PLASTIC WHEELS meet need for non-sparking feature with high capacity ratings and resistance to oils.

treads of various rubber compounds for specific applications. Most notable are Neoprene (for resistance to chemicals normally harmful to rubber) and static-conductive (for explosive atmospheres).

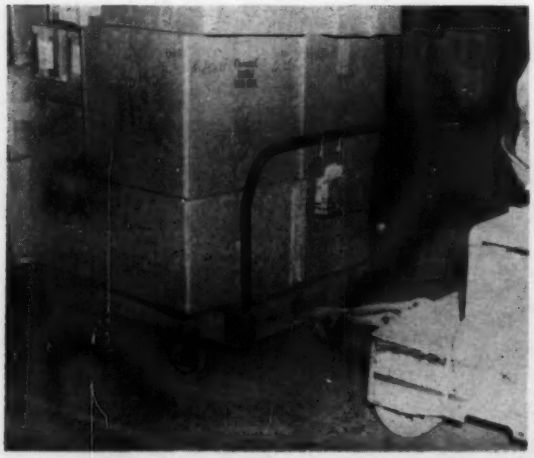
Most often the rubber tread is vulcanized onto a metal rim or center. Some manufacturers prefer to use demountable and replaceable rubber tires clamped between two rims or flanges. This latter type is increasing in popularity.

Over the years, caster and floor truck manufacturers have succeeded in making their products better by adopting new developments as quickly as advancing technology made them available. In addition to the three major factors just described, there are many other materials, methods and machines which—although virtually non-existent half a century ago—are widely used in today's casters, wheels and floor trucks.

Lubrication

Pressure grease lubrication is one feature which has been standard in casters for a longer time than most people are aware. At least one model introduced in the early 1920's featured this refinement, and its first use in casters probably was even earlier.

The importance of correct and regular lubrication to reduce friction and improve wear characteristics always has been emphasized by manufacturers of non-powered floor equipment. Despite this, users of such



INTEGRATION of powered and non-powered equipment shows they are complimentary, not competitive.

MODERN BOX TRUCK is typical example of the specials which are built for individual requirements.

DRAGLINE TRUCKS are mass-produced trucks, mostly of standardized construction. Demand for this type of truck has grown with the increasing use of dragline conveyors to reduce the unit cost of freight handling.

equipment too often overlook this need. The development of grease seals is one of the latest manifestations of proper interest in good lubrication practices. Various devices are used to protect all bearing surfaces from foreign matter and to retain the lubricant. Where the application can justify the additional cost, longer caster life, cleaner floors and reduced maintenance often result.

Machinery and Mechanization

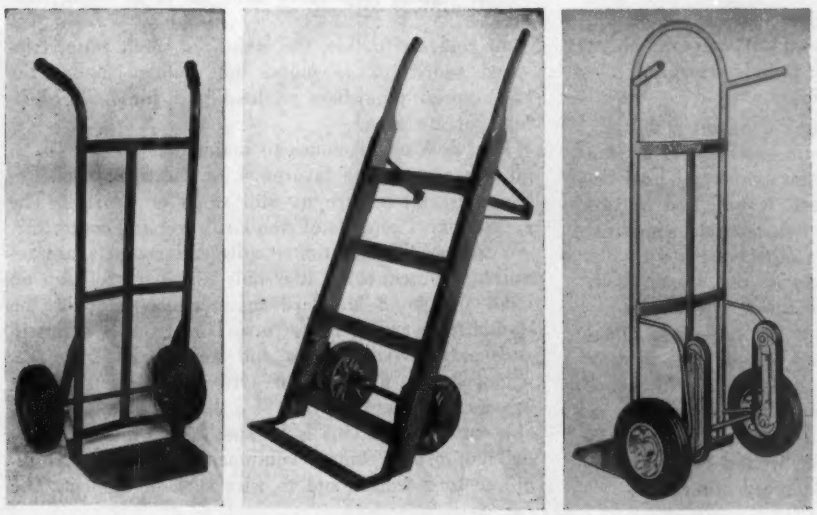
Present-day machine tools cut much faster and more accurately than their former counterparts. Such features as hydraulic power feeds, contour tracing devices and other automatic attachments permit machining with greater precision at lower unit costs. Recent developments in cutters, such as carbides and ceramics, effect additional economics.

Coupled with these are automatic loading and unloading mechanisms, and the techniques of mass production. All have resulted in progress. They enable the manufacturer to improve the quality of his casters and trucks and, at the same time, build them more efficiently.

Materials and Processes

Most casters were once made from castings, primarily semi-steel and malleable iron. New processes have brought into the picture new materials with which semi-steel and malleable castings now share the market. Some of today's heavier casters are made of cast steel. Since the early 'thirties, drop forgings have been used. Aluminum, ductile iron and special alloys also are now utilized. Stampings have been used for light duty casters for many years, and drawn-steel wheels are used in casters with load ratings in

(Continued on page 88)



TWO-WHEEL hand trucks have undergone many refinements in a number of features. Two of today's streamlined trucks flank an old-timer at left. Utility truck at far left has rubber tires and handles, tubular construction. Note the stair climbers on truck at left to negotiate stairways easily.

Why Use Two-Speed Electric Hoists?

There are a number of reasons why you should. They are covered here, plus a comparison of the positive two-speed control and the five step variable speed control.

By C. E. Schirmer, Chief Engineer
Hoist & Crane Division
Robbins & Myers, Inc.

SINCE two-speed, high-ratio electric hoists were introduced to the material handling market—over twenty-five years ago—they have grown in popularity, and for these reasons.

1. Speeds are stabilized.
2. There is less maintenance expense.
3. First cost is lower.
4. Operation is economical.
5. There is less operator fatigue. (Believe it or not, operators have been known to complain about controls that require high thumb pressure.)

Why are these reasons important?

No. 1 Because speeds are uniform and stabilized, the operator can always depend upon securing the speed he selects, regardless of the amount of load being handled. This positive speed is obtained in two ways. Some manufacturers use two separate windings, or motors, on a common shaft; others use a specially wound motor with two windings on one frame. Both methods provide positive, two speed operation.

The speed ratios for the most desirable and effective practical use are 3 to 1 and 4 to 1. These ratios give resultant hook speeds for all loads, within the capacity of a given hoist, more favorable than those obtained by use of either two speed, 2 to 1 ratio squirrel cage motors or slip ring wound rotor motors with three or five step variable speed control.

The accompaning curves show the comparative speeds. Speed obtained with a given speed point and load, in hoisting, with the slip ring motor, is not the same as that secured in lowering. Note how the speed curves point out that effective or usable speeds drop off as the load increases when using the slip ring motor and five step control. In other words, the speed obtained when using the five step or variable speed control is entirely dependent upon the load being handled.

In contrast to this, the stabilized, high ratio, two-speed squirrel cage motor and control assure the same speed regardless of load and for both hoisting and lowering.

No. 2 When it comes to maintenance expenses, it all works out more favorably for the two-speed electric hoist. There are no slip rings or brushes. The control panel consists of standard reversing contactors. No relays with additional coils and contacts are required. Consequently, it is only necessary to keep on hand the small standard maintenance kits for the standard reversing contactors. This reduces maintenance parts inventory cost and storage space.

No. 3 The first cost of a two-speed electric hoist is somewhat less than that of a three or five step variable speed hoist. This is because of the lower cost of the motor and control equipment. Less labor is required to assemble and to wire such equipment. The

enclosing case for the control equipment is smaller, thereby making the overall dimensions of the hoist more compact.

No. 4 For the same foot-ton energy output, the two-speed motor hoist will use less electricity because no current will be dissipated through a resistor, as happens with the control required for a slip ring motor. Granted, electricity is a poor comparison because it's cheap. But try operating 300 hoists, 16 hours a day, and you will find that electricity is not as cheap as you might have thought.

No. 5 By using push button control for positive speed operation, the operator does not have to divide his thoughts. He can concentrate upon the work to be done. This reduces operator fatigue, and, consequently, more effective work is accomplished.

Two types of two-speed push button stations are available. One consists of four buttons, providing a separate button for each direction of both speeds. The other type has two buttons, one for each direction. Two speeds are obtained by the depth to which the button is depressed for its respective speed. The depth of button depression is less than that on the five step control; little pushing effort is required. This eliminates those sore thumb complaints.

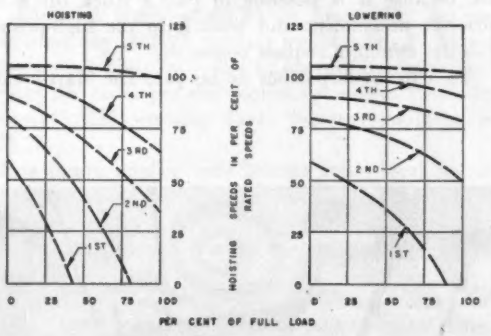
Wherever two-speed, high-ratio, electric hoists have been installed in such locations as foundries—for pulling patterns and setting cores—or for close fitting assembly or disassembly work, they have proved satisfactory. They are also used in final assembly plants of automobile companies for handling engines and bodies. They handle lift sections to monorail systems where the rail must be matched to stationary spur tracks. The two-speed high-ratio electric hoists have been found to give the high speed desired for the actual lifting distance and yet make available the slow speed required for the final alignment of the lift section with the stationary tracks. They thus minimize shocks to the latching mechanism.

Has Safety Features

The usual safety features—such as a pilot circuit transformer to reduce the current to the push button station to 110 volts and also the use of a separate wire to provide a ground from the push button station to the hoist—are incorporated in the well designed two-speed electric hoist.

While the above refers specifically to push button controlled hoists, the same two-speed high-ratio characteristics can be obtained with the trailer cab hoists or for hoists used on traveling cranes. In these cab controlled arrangements, enclosed drum type master switches are widely used. These controllers, of radial handle type, are usually equipped with a spring return device to bring back to neutral, or off, position automatically when released. Since no resistors are required, the cab can be made smaller. Also, the two-speed drum type master switch requires less effort to operate than that required to operate a five step variable speed drum controller.

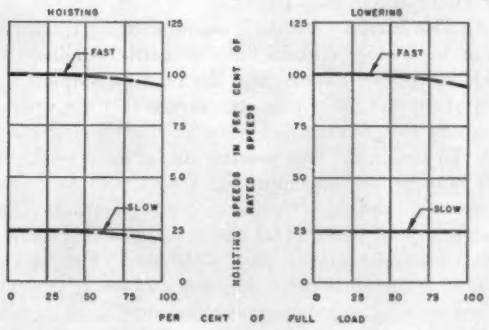
ALTERNATING CURRENT SLIP RING MOTOR AND CONTROL



STANDARD CATALOG SPEED FEET PER MINUTE	SELECTED SPEED	HOISTING SPEED — FEET PER MINUTE									
		HOISTING					LOWERING				
		PER CENT FULL LOAD					PER CENT FULL LOAD				
		NO LOAD	25 % LOAD	50 % LOAD	75 % LOAD	100 % LOAD	NO LOAD	25 % LOAD	50 % LOAD	75 % LOAD	100 % LOAD
20	1ST	12	6	—	—	—	12	10	9	4	—
20	2 ND	16	13	8	2	—	16	16	14	14	10
20	3RD	18	16	14	10	7	18	18	18	16	16
20	4TH	20	18	16	16	14	20	20	20	19	18
20	5TH	21	21	21	20	20	21	21	21	21	20

SPEED CURVES show that hoist speed is entirely dependent upon the load handled, when using five step variable speed control; and that positive speeds are obtained regardless of load with two-speed control.

TYPICAL TWO-SPEED SEPARATE WOUND MOTOR



STANDARD CATALOG SPEED FEET PER MINUTE	SELECTED SPEED	HOISTING SPEED — FEET PER MINUTE									
		HOISTING					LOWERING				
		PER CENT FULL LOAD					PER CENT FULL LOAD				
		NO LOAD	25 % LOAD	50 % LOAD	75 % LOAD	100 % LOAD	NO LOAD	25 % LOAD	50 % LOAD	75 % LOAD	100 % LOAD
20	SLOW	4.9	4.8	4.67	4.9	4.25	4.9	4.9	4.9	4.9	4.9
20	FAST	20	19.7	19.4	19.2	18.9	20	20	19.7	19.4	18.9

Saved: $1727 Per Truck with Two-Way Communications

How radio reduced operating costs and improved handling efficiency by eliminating deadheading at The Martin Company.

INDUSTRIAL two-way radio, installed on fourteen material handling trucks, has helped eliminate truck deadheading at The Martin Company and reduced truck operating costs as much as $1727 per truck.

Two big material handling headaches—great fluctuations of the work load and the geographic location of buildings—made an organized, efficient handling program a must at Martin. The first headache—fluctuations of the work load—is common in the aircraft industry. The second difficulty arises from the 1027 acres of plants, outside storage space, railroad sidings, airfield and automobile parking lots that comprise the Baltimore Division.

William K. Dietz, Supervisor of Transportation at Martin, proposed that two-way radio be tried to help solve these problems. As a consequence, 14 industrial trucks of all types—gas-operated, electric-operated, fork lifts, platform trucks—were equipped with a low power industrial two-way radio designed specifically for material handling trucks.

At The Martin Company, manufacturing the three-stage launching vehicle for the earth satellite, the Matador guided missile, and the P6M jet-seaplane, as well as myriad other products, means that the various handling assignments may vary as much as night and day. To obtain the best possible use of each truck, the company groups its industrial trucks into two main categories: assigned trucks and on-call trucks. The first group is made up of those vehicles that have a permanent assignment day after day. The on-call trucks, on the other hand, are in a pool where they are called upon by any department that may need them.

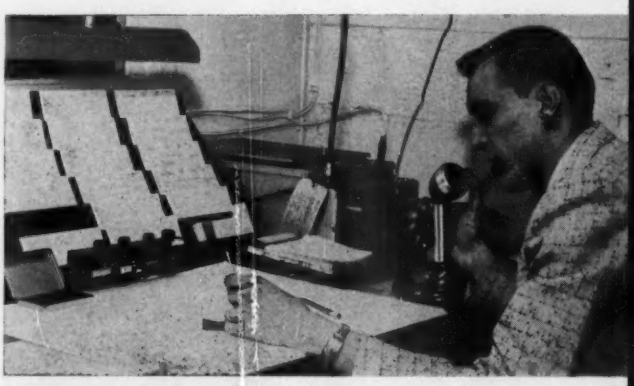
Before installing radio, control of the on-call trucks was extremely difficult. A truck could be working almost anywhere on the 1027 acres. If the dispatcher needed that truck immediately for a high priority job, he had to try to reach the truck operator by telephone. Frequently, however, there was no telephone near the truck operator, or the person who answered the telephone couldn't find the operator. Then the dispatcher had to have someone jump into the nearest available vehicle and go out to track down the wanted truck.

Knowing that this was the least efficient end of the material handling operations, Mr. Dietz installed the two-way radios on the on-call trucks.

This installation gave the truck dispatcher control over the on-call truck that he had never had before. Wherever a truck may be in the plant, the dispatcher now can get in touch with its operator immediately.

Instead of deadheading back to the truck pool after each job, or instead of the operator having to waste time hunting for a telephone to call the dispatcher upon the completion of a job, the truck operator now radios the dispatcher at the beginning and close of each assignment, and his next assignment is given to him by radio. Thus radio saves time, reduces fuel consumption and reduces wear and tear on the trucks. Trucks can now be assigned from job to job in the most efficient sequence instead of on a first-come, first-served basis. High-priority assignments get faster service because it is possible to pull a truck off a low priority assignment and send it to the high-priority job the minute a request comes in.

To help the dispatcher do his job, The Martin Com-



SPECIAL RACK enables the dispatcher to tell at a glance the location of any of the company's trucks.

pany set up a model dispatching system. Instead of using a large, cumbersome sheet to record data on, the dispatcher enters such information as type of truck, number of truck, driver's name, location of job, time in, time out, estimated time required for assignment, etc., on individual printed forms. The forms for each truck have a specified position on a wooden rack in front of the dispatcher. When a call comes in for a truck, the dispatcher fills out a slip and, if it is not a rush order, files the slip in its proper place on the rack. That slip becomes the truck operator's next assignment when he calls in at the completion of a job. The assignment, naturally, is given to the truck nearest the job location.

In case of a high-priority order, the dispatcher can tell by a glance at the rack which truck is nearest the location of the high-priority job. He then pulls that truck off its present job and reassigns it to the top-priority work.

At any time of the day, without wasting a minute of time, the dispatcher can tell the location of any truck and what its next scheduled job will be. At the end of the day, he can see exactly how much work each driver accomplished.

How Savings Were Achieved

When asked about the economies that arise from the use of two-way radio, Mr. Dietz replied, "Radio saves us a lot. For instance, with two-way radio there is less wear and tear and we save on fuel because our trucks now operate in a more efficient sequence. There is less lost time because of deadheading, as we're able to get more out of our trucks. Although it's easy to see these savings, it's difficult to come up with a dollars-and-cents answer. My most conservative estimate is that two-way radio saves us a minimum of 10% in operating our industrial trucks."

The Martin Company figures the cost of operating an industrial truck at $4.00 an hour—$32 for an eight-hour day. A 10% savings would mean $3.20 per day. Since it costs only 85c to operate the radio, net savings per radio per day would amount to $2.35. In one year (245 working days) two-way radio saves $575.75.

This figure applies only to one radio working an eight-hour shift. In many cases, Martin's industrial trucks operate 24 hours a day; so it is entire possible that a single radio can save the company as much as $1727 in the course of a year.

In addition to using two-way radio on its industrial trucks, The Martin Company also uses radio for other jobs. The company is licensed for a special industrial frequency as well as for a low power industrial frequency. Plant security—an elaborate system of guards necessitated by the secret government work done by the company—depends upon portable two-way radios. The company fire-truck is radio-equipped. Aviation radio is used at the airfields.

Eventually the company hopes to weave all radio into a complete network that will be invaluable in times of emergency or catastrophe.

Data and photographs courtesy Bendix Radio.

TRUCK OPERATOR, at the end of a job, calls back to the dispatcher and receives his next assignment.

RADIO is mounted on some of the trucks so that they can carry loads that hang over the end of the platform.

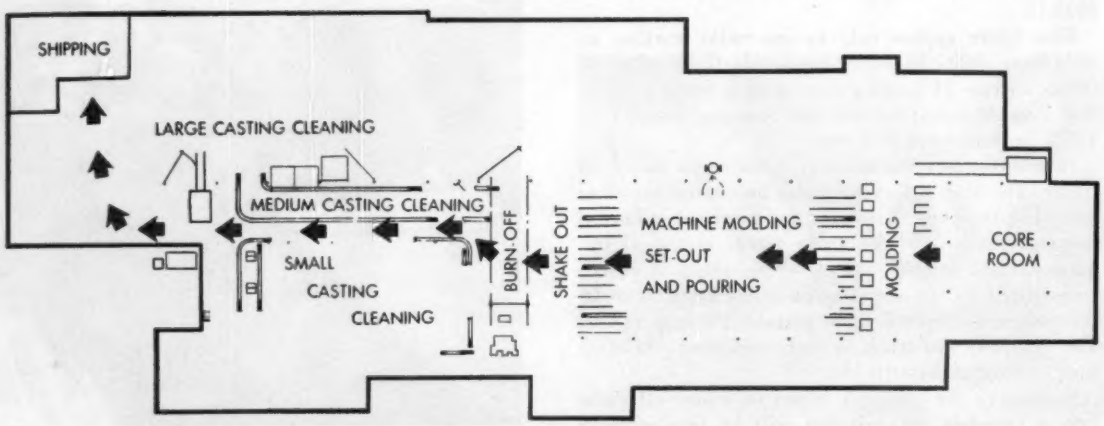
FLOW METHODS *to speed*

A lighter, safer, cleaner, more productive foundry could be designed, Empire Steel Castings decided, and that they proved it is shown in this description of their highly mechanized operations.

INDEPENDENT FOUNDRIES have long recognized that their continued existance depends upon increases in mechanization. Many have modernized operations to a considerable degree—with much sucess—but few have made greater gains than Empire Steel Castings, Inc., of Reading, Penna.

As a result of an extensive modernization and expansion program, the foundry is now lighter, safer, cleaner, and one-third larger in area. It is highly mechanized and semi-automatic in operation. Increased size, new equipment and new methods have tripled productive capacity —*and provided for 20 percent greater employment.*

When the company found it couldn't get all the equipment it wanted from standard sources of supply, it devised its own machines and flow methods. The "home-grown" equipment has been installed in the small castings department, where stainless, carbon, and low alloy castings weighing fifty pounds or less are produced. These, with the medium castings, constitute more than half of the work handled at Empire—although the plant is equipped to handle castings of larger dimensions, turns out some weighing up to one ton.



INCREASED MECHANIZATION, with new equipment and methods, plus larger size, have tripled productive capacity, and provided for 20 percent more employment.

production of small castings

Empire has installed a track transfer system running through the pouring department from molds to shakeout . . . a portable shakeout machine . . . a work-high roller conveyor system, with switches, through the small and medium castings cleaning department . . . and movable grinders running on dollies for cleaning medium-sized castings too large for the stand grinders.

Handling, Transporting Molds

An unusual means was developed for handling and transporting molds from the molding machines, across the pouring floor and onto the shakeout.

After melting and testing, the heat is tapped into a 7000 pound lip-pour bull ladle carried by bridge crane. Side trunnions on the ladle permit it to be deposited in a stand and titled to fill 200 pound and 500 pound capacity pouring ladles. These are carried by bridge crane monorail system over the small molding area, where molds set off on metal dollies await the pour. Each dolly consists of two steel, 2 x 2 inch channel sections about 6 feet long, with 20 inch cross members welded near their ends. The dollies run on grooved wheels on angle-iron rails, with the V-edge up, mounted on the floor of the pouring area between molding machines and shakeout. There are six pouring tracks, each two being serviced by the over-head monorail unit, cross-connected.

When the molds have cooled, they are hand-pushed along the tracks to the shakeout unit. Since Empire couldn't find a shakeout to meet its needs, it developed one of its own. This is a portable 4 x 6 foot unit which is electrically operated. It rides at the end of the pouring tracks, on a track built over a grind and a return, 24 inch asbestos sand belt. Dollies carrying the castings are rolled to the ends of three pouring tracks, where the portable shakeout machine is brought into position. This shakeout moves on a track located at right angles to the pouring tracks. A scoop bucket pneumatically tilts the molds to the shakeout screen, but the bottom boards are kept from sliding off the dollies by a raised edge at the back of the lifting device. Empty dollies and bottom boards are lowered to the track for removal by

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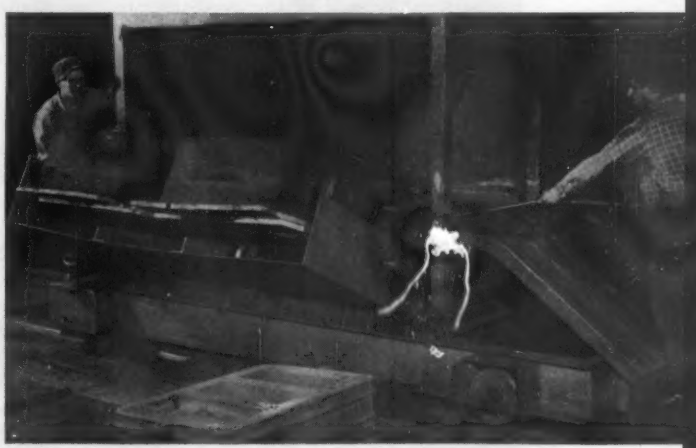
MOLD DOLLIES ride on grooved wheels and tracks. Set between tracks are roller conveyors on which molds are returned from shakeout to molding machines.



MOBILE SHAKEOUT at right angles to pouring tracks. Belt conveyor under shakeout track carries sand away, and dust is sucked out through overhead collector.

"Streamlining has saved the company 27 percent in

hand to roller conveyors. Set between the pouring tracks, these conveyors return the dollies to the molding machines.

As the molds drop on the vibrating screen, castings are separated from mold sand. The sand drops through the grid, and is carried away by the conveyor belt. Castings are hooked off the shakeout into large dump type tote boxes on a lower level for movement to the cleaning department. Dust rises through the hood on the shakeout into a dust collector pipe overhead.

Cleaning Bottlenecks Gone

Straight line flow of work in the cleaning department has eliminated a bottleneck common to many foundries. The dump boxes, carrying the castings from shakeout, are moved by electric platform lift trucks to a centrifugal blast tumbling machine by skip hoist. An electric hoist transfers the castings to the skip bucket. After preliminary tumbling and cleaning with steel shot, they are discharged to self-dumping tote boxes on a platform truck and carted to abrasive wheel cut-off machines or oxyacetylene torches to remove gates and risers. These are removed from stainless castings by iron power cutting torch.

With the burn-off operation completed, the castings are put into 18 x 30 inch boxes on a waist-high roller conveyor system to pass through other cleaning operations. Switching sections on the roller conveyor first shunt the castings from the main conveyor to a siding by the grinding machines.

Empire has mobilized two types of grinders: one, the conventional stand grinder; the other, a modified swing grinder of their own design. Two of the latter are used. Each is placed on a two-wheeled dolly containing an electric motor which drives a grinding wheel at the end of a three to four foot long shaft. The dolly rides a low wooden bench covered with steel plate, punched with holes at one end of the bench to hold a movable metal wedge plate. The castings are held in place for grinding between the wedge and an air-cylinder-operated clamp. Handles are mounted on the framework at the grinding wheel end of the shaft. By grasping these handles, the operator can move the grinder back and forth on the bench to apply to the casting.

Use Tote Boxes, Conveyors

Tote boxes carry the ground castings to a cross conveyor which feeds a transfer car. This is the transfer point to any one of five conveyors running to the chipping section. Castings are routed to the appropriate chipper for further processing. After the chip-

ABOVE: Cleaning department for small sized castings, with double track conveyor serving all areas. Streamlining here has saved 27% of total cleaning costs.

ABOVE: WORK FLOWS in straight line from molds to inspection in medium (shown) and large casting cleaning areas, parallel to small casting department.

LEFT: TURNTABLE switch shunts castings from main conveyor to sidings by grinding machines. With boxes kept at work height, manual effort is minimized.

CONVEYORIZED BURNOFF line, where risers are removed, leading to other cleaning operations. Small castings are placed into 18 x 30 inch tote boxes.

cent in the small castings department . . ."

ping operation, castings are tossed into waiting empty boxes on the transfer car. The car is pushed to any one of three roller conveyors passing through three sheetmetal boths for electric welding and arc-air-washing. Then the castings emerge to a number of benches for final chipping and grinding with air-operated hand tools. Castings are then removed from the conveyor to be placed in the heat treating furnaces, after which they are again shot blasted and given final inspection prior to shipment.

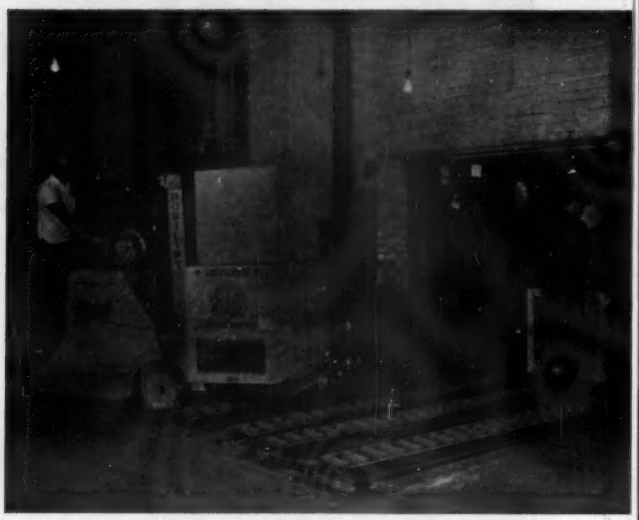
Inspection methods include a visual check for surface defects, magnetic particle checking and radiographic testing by radioactive isotopes to prove internal soundness. Dimensional accuracy is verified with gauges. Valves and other castings which must be leakproof are given an air test in special fixtures.

The medium and large-casting cleaning departments parallel the small casting department, so that work flows in a straight line from molds to inspection in these departments also. Medium size castings are carried on a straight line conveyor through the same operations as the small castings. Streamlining the cleaning operation has saved the company 27 percent in total cleaning costs in the small castings department alone.

DOLLIE MOUNTED GRINDERS roll back and forth on two wheels riding steel covered bench as castings are clamped pneumatically against a metal wedge plate.

Is a One-Floor Plan "Out" for You? Here's an

PALLET DOLLIES consisting of 36-inch sections of roller conveyor assist in moving loads out of vehicles. Pallets form smooth runway, distribute weight evenly.



SECTIONS OF ROLLER CONVEYOR expedite loading of elevators. Trucks rarely leave assigned areas. Another takes the load from conveyor to storage.

Multi-Story Warehousing CAN

IS SINGLE-STORY property the only answer to efficient handling? At least one company doesn't think so.

Otis Terminal Warehouse, through continuing efforts to improve its handling methods, makes a multi-story warehousing operation both competitive and profitable. Moreover, the firm has built a system so balanced that there is no waiting time anywhere in its operation. This is most important to a business that has only service to sell to its customers.

Otis is located in a seven-story building, only four blocks from Cleveland's downtown Public Square. The total storage area of these seven stories is approximately 500,000 square feet.

The principal handling equipment in the warehouse consists of a fleet of eight gas and six electric fork trucks, approximately 16,000 pallets, several pallet dollies, many sections of gravity roller conveyor and eight high-capacity freight elevators. Of the eight gas trucks, three are LP-Gas powered.

The volume handled weekly often exceeds 2500 tons of general merchandise—including various items of cased goods, drums of oils and chemicals, and boxes and crates of various household appliances. As many as 10 boxcars and 50 semi-trailers are handled in a day. All freight incoming via truck or rail car is palletized upon receipt, with the exception of the large household appliances. These are packaged by the manufacturer in a way that allows palletless handling.

Two-Man Palletizing Teams

Palletizing crews are two-man teams. One crew is assigned to each trailer or rail car, and one fork truck usually services three trailers or two rail cars. The fork trucks work in assigned areas, and rarely move out of

Operation Which Proves...

PALLETLESS HANDLING of appliance cartons is achieved with a lip-type device in place of forks. Lip engages flap of cover. Bumper holds carton vertical.

Be Efficient

HIGH-LIFT FORK TRUCK serves as inter-floor elevator. Operating near receiving docks, it lifts loads through opening between floors, to the floor above.

them. Palletizing crews work on two pallets; after the first pallet is loaded they begin to work on a second. This provides time for the fork truck to move out the first load. So well balanced is this operation that a sequence is set up in a rhythm which does not stop until the job is completed.

Potential Bottlenecks Avoided

To avoid potential bottlenecks at freight elevators, Otis has equipped each with a few sections of conveyor. Four sections of standard 10-foot roller conveyor are mounted on the floor of each elevator car. Matching sections are installed on the floor outside the elevator doors. This system enables the elevator to expedite loading and unloading by merely pushing the pallets on and off the elevator. These conveyor sections are spaced so that a pallet will ride on two sections. A walking space is provided between them. Since each elevator is equipped with four sections of the conveyor, two rows of pallets can be accommodated side by side. Each row is two pallets deep, making a total of four pallet loads per elevator trip. In addition, several pallets can temporarily stored on the conveyor sections outside the elevator at each floor. This permits

(Continued on page 144)

You may be placing more strain on your slings than you realize. Here's how to compute the stress for any wire rope sling.

Calculating Stress In Wire Rope Slings

Stress in a wire rope sling is dependent on two factors: the load and the angle the sling makes with the top of the load. The more acute this angle becomes, the greater the stress in the sling; because a large amount of the stress is applied in a "squeeze action" and not direct lifting force.

Stress can readily be computed for any sling angle. The chart indicates the stress in each side of a sling rope under various load conditions and for ordinary sling angles ranging from 30 to 75 degrees.

The salient points for sling loads are:

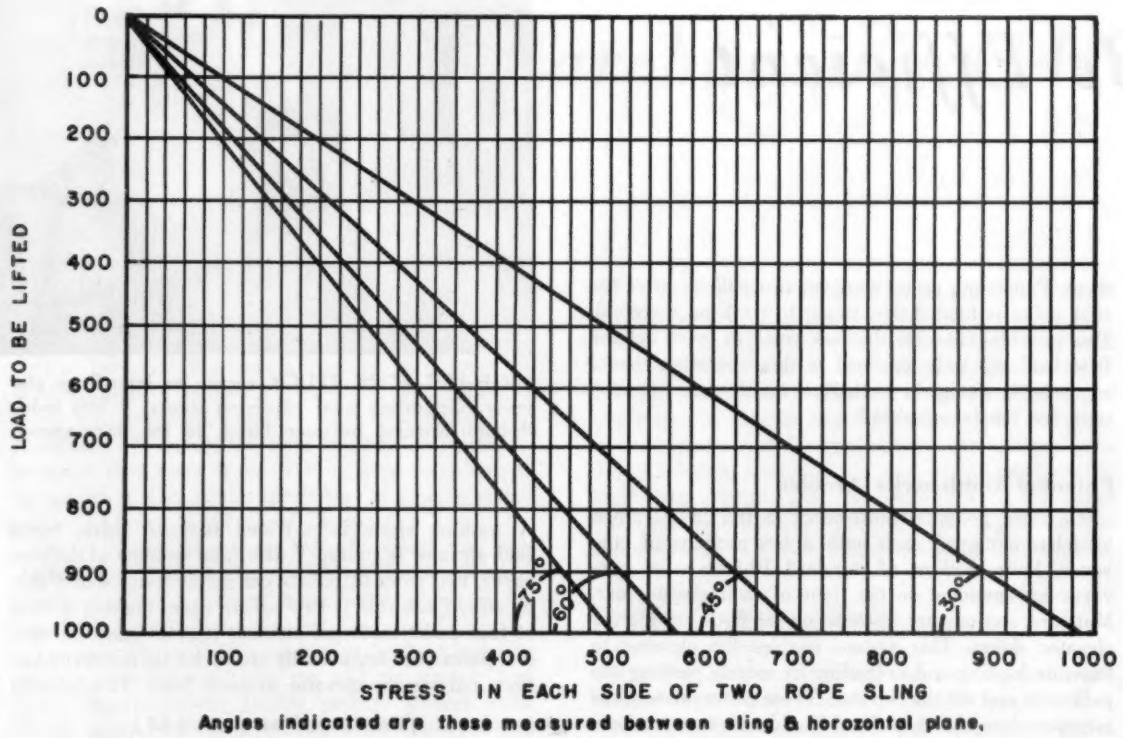
1. Estimate the weight of the load.
2. Know the strength of the sling.
3. Select as long a sling as possible to reduce the angle stress imposed.
4. Avoid sharp bends in the sling by inserting soft material at the angles.
5. Make sure the load is well balanced in the slings (you may need two).
6. Exercise care in setting the load down evenly on stout material that will permit you to withdraw the slings without damage.
7. Provide pegs for storing slings when not in use.
8. Place a number tag on each sling and set up a schedule of tension tests.

Example:

Load to be lifted ..... 1000 lbs.

Normal load for each side of 2-rope sling with ropes vertical = 500 pounds.

Actual angle between sling and horizontal plane = 45°. Stress in each side of a two rope sling at 45° angle to horizontal plane = 707 pounds, or 207 pounds greater than normal load on each side of the 2-rope sling with ropes vertical.



By engineering more mechanization into material handling, we put . . .

MOTOR REPAIRS ON A PRODUCTION LINE BASIS

By Harold Bongarten, Manager,
New York Apparatus Service Shop,
General Electric Company

THE PROBLEM

A business like motor repairing has always been considered as a job-lot operation and—because of the variety of makes, sizes and models—has hardly been thought adaptable to the principles of automation.

Of course, as the repair business progressed, some short cuts evolved. These included the burning out of motor windings, the manufacture of coils on a motor driven Universal winding head, and the use of electric or air operated wrenches for dismantling and assembling. All of these steps had some time-saving and cost-reducing elements, but the operation was still on a job-lot basis, with each job project in itself.

With the expansion of automation throughout industry, the quantities of integral horsepower motors have increased enormously. The failure of any one of these motors, no matter how small, can shut down a production line, and sometimes an entire plant. This can become very expensive, indeed, as capital equipment lies idle, waiting for a motor to be repaired. And even for larger companies, to maintain spares for every motor in the plant would be terribly costly.

Thus it became apparent that something had to be done to reduce the outage time of a motor by speeding up the motor repair job. To do this, it was recognized, this process had to be changed from the job-lot category, and that, for the first time in the motor repair business, the principles of automation had to be applied in this business itself.

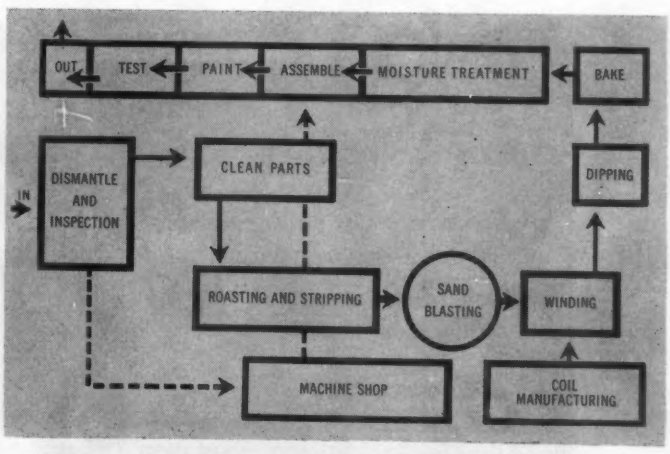
THE SOLUTION

It was realized that the job of mechanizing the repair operation would be a difficult one because of the variety of sizes, shapes, and makes of motors, but a study of the problem resulted in these conclusions:

1. The use of 18 inch roller conveyors to minimize the handling of the equipment would be the most appropriate. These would be set at table height so that work could be performed at a man's standing position.
2. A monorail overhead crane system would be adequate in the line where overhead handling was required.
3. A new type of conveyorized oven would have to be designed and built.
4. Conveyorized cleaning equipment would be required.
5. A simple paint spraying technique would have to be incorporated in the system so that motors could be safely painted right on the line.
6. The testing equipment would have to be more automatic and testing take less time.
7. All of these features would have to be incorporated into a smooth flowing work line and so coordinated that the time required for each operation would be predetermined to avoid bottlenecking at any one point.

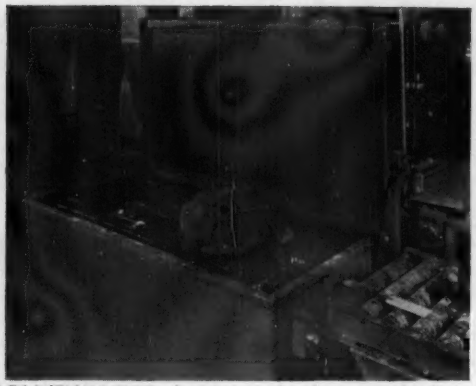
The picture story shows the sequence of op-

(More on next page)



"SEMI-AUTOMATED", mechanized job-lot operation.

1. AT RECEIVING data recorded, trouble diagnosed, motor disassembled, and parts go into wire baskets.



2. CONVEYORIZED cleaning tank submerges baskets, then elevates them to height of rest of conveyor.

erations of the "semi-automated" line which resulted. In the first picture, the motor is received, the data recorded, and the trouble diagnosed. It is then dismantled, using air operated tools. As the motor is being disassembled, the parts to be cleaned are placed into wire baskets which are on conveyors in front of the operator. Also, the coil data is recorded and immediately sent to the coil section.

Coils are then immediately started in manufacture by girl operators who set up the semi-automatic machines.

The parts in the wire baskets are then rolled on the conveyor to the cleaning tank, which is a detergent agitator type. This tank is equipped with a conveyor which elevates to the same height as the rest of the conveyor system. After the baskets are rolled on, they are submerged into the solution and agitated for a present interval of time. Upon completion of the cycle, the baskets emerge automatically and are rolled onto the conveyor to wait for the stator, which has taken another conveyor path to the stripping zone.

After one end of the stator winding is cut off with an air driven chisel, the stator goes into a gas-fired, automatically controlled "burnout oven".

When they came out of the oven, stators are fan-cooled. The stripping operation is then completed as the wire is easily removed once the varnish has been burnt out. The bare stator is then moved by conveyor to the next station to be sandblasted.

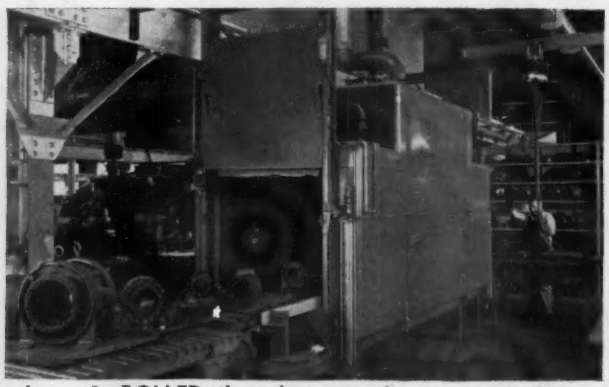
Conveyors Make Transfer Easy

Cleaned stators are then rolled to the winding station on conveyors which are sandwiched between work tables. A girl can easily move a bare stator from the conveyor onto her work bench to insert and connect the coils which have already been made and are waiting for the stator to arrive.

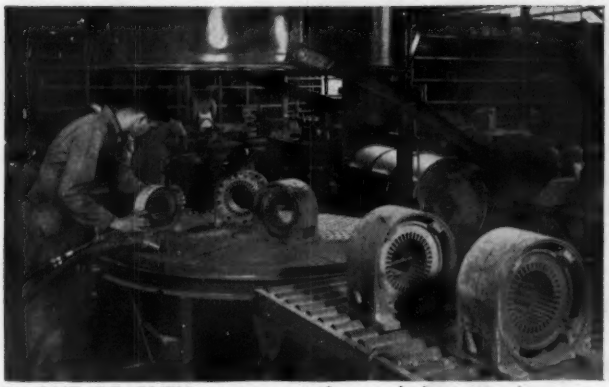
Once all the coils are inserted and connected, the wound stator is then moved back onto the conveyor and rolled to the dipping tank, where it is dipped in a newly developed baking varnish. Dipping is performed quickly with an air operated hoist held overhead on a monorail.

When the stator has been properly saturated, it is

5. CONVEYED to varnish tank, wound stator is dipped with air operated hoist suspended from monorail.



6. ROLLED through automatic, conveyorized oven, stators emerge onto conveyors, spaced for cooling.



3. OUT OF OVEN, stators are fan cooled, stripped completely, and bare units rolled to sandblasting.

4. CLEANED stators move to winding station where new coils, made in advance, are waiting for them.

placed in a pan and rolled onto the automatic conveyorized oven. This is a recycling, high velocity, gas-fired baking oven specially designed for motor repair work. It operates at a much higher than usual temperature which—coupled with the new varnish—reduces curing time, and it indexes in such a way that a stator placed in a given-size pan will emerge from the oven automatically. The stator then rolls onto conveyors with just enough space to allow for a cooling cycle before it reaches the assembly line.

The assembler then pulls the stator onto his bench. The cleaned parts are waiting for assembly on a conveyor in front of the operator, where they had been deposited after emerging from the cleaning tank. Motors are then assembled, the assembler using electric and air operated hand tools. Meantime, new bearings (if required) have been brought from the storeroom and deposited in the cage with the other parts and are ready to be used in assembly.

The motor is then picked up with the overhead crane on a monorail and deposited onto a conveyor which rolls it to a "downdraft" spray system. It can be spray-painted right on the conveyor, with the fumes being exhausted through the roof.

From here the motor is then rolled directly onto the test bench. The test panel has been designed to cut down on testing time without eliminating any of the required tests. By hooking on three leads, a running test can be made at the same time as the phase balance is read on three individual ammeters. Still in the same position and with the same setup, the motor can be given a high potential test. A load test can also be given if required.

Now the motor is ready for shipment, and it is rolled on conveyors into the truck dock. Here motors are loaded on trucks by means of an overhead crane.

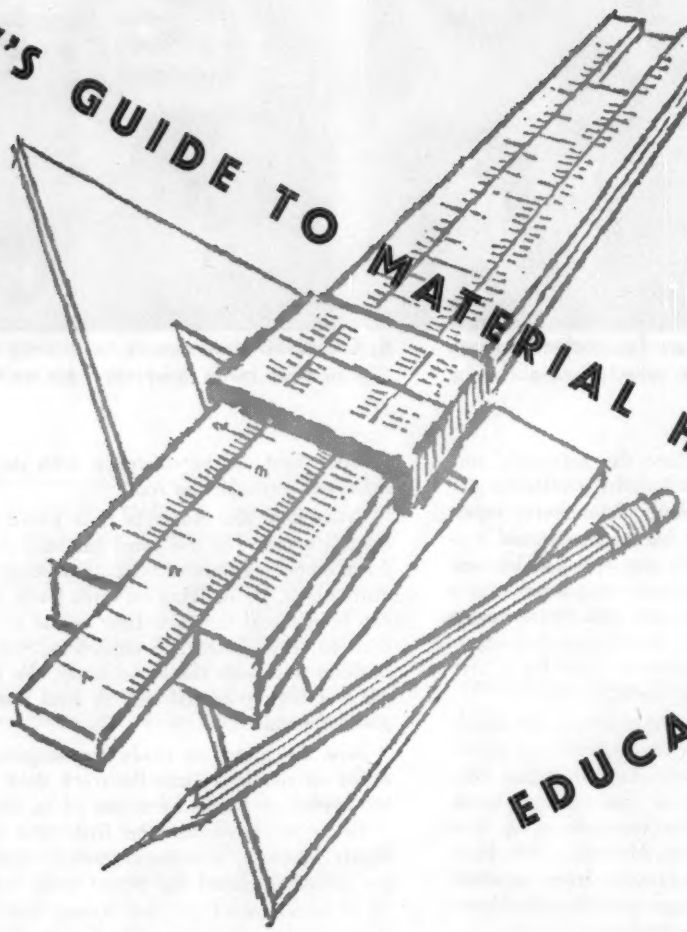
There we have, for the first time in the motor repair business, a semi-automated repair line which has greatly reduced the repair cycle on the integral (1-50 horsepower) random wound motors.

To further decrease the overall outage time to the customer, company owned trucks have been equipped with radio telephones so that they can be rerouted to make emergency pick-ups and deliveries.

7. "DOWNDRAFT" spray system (above) allows painting right on conveyor; fumes exhaust through roof.

8. FOR SHIPMENT, motors roll into dock (right) on conveyor and are loaded by overhead crane.

FLOW'S GUIDE TO MATERIAL HANDLING EDUCATION



In recent years, industry has experienced a rapidly growing need for trained personnel in the field of Material Handling. As a result there has been a substantial increase in the number of educational courses offered on the subject—by colleges and universities, trade associations and related institutions. The following list is a summary of the latest up-to-date information on Material Handling educational opportunities throughout the United States. This reference is published periodically in FLOW, as a service to readers interested in such courses. Additions and revisions are added periodically as we are informed of them.

For their assistance in the preparation of this feature, FLOW is grateful to The Material Handling Institute's College-Industry Committee on Material Handling Education, and Prof. Harold T. Amrine of Purdue Univ.

Reference List of Material Handling Courses

Name of Institution	Location	Topics	Starting Dates	Duration	Fees or Tuition	Open to Outside Enrolm't.
U. of Akron	Akron, Ohio	Material Handling	Feb	2 hrs, 12 weeks	$25.00	Yes
Alabama Polytechnic Inst.	Auburn, Ala.	Material Handling	Jan, & March & June	5 hrs, 12 weeks	On request	No
American Univ.	Washington, D. C.	Material Handling	Feb & June	1 eve, 16 weeks	$51.00	Yes
U. of Arkansas	Fayetteville, Ark.	Plant Design and Material Handling	Feb	1 semester	On request	No
Bradley Univ.	Peoria, Ill.	Material Handling	Sept	1 semester	$52.50	Yes
U. of Buffalo	Buffalo, N. Y.	Plant Layout and Material Handling	Feb & June	1 semester	On request	No
U. of Buffalo	Buffalo, N. Y.	Material Handling	Feb	eves, 1 sem	$90.00	Yes
U. of Calif.	Berkeley, Calif.	Material Handling	Spring	1 semester	On request	No
U. of Calif.	Los Angeles, Calif.	Industrial Package Design	Feb & Sept	1 semester	$27.00	Yes
John Carroll U.	Cleveland, Ohio.	Plant Layout and Material Handling	Sept	eves, 2 sem	On Request	Yes
Case Inst. of Technology	Cleveland, Ohio	Plant Layout and Material Handling	Sept	1 semester		Yes
City College	New York, N. Y.	Plant Layout and Material Handling	Feb & Sept	eves, 16 weeks	$25.00	Yes
Columbia U.	New York, N. Y.	Plant Layout and Material Handling	Feb	1 eve, 14 weeks	$66.00	Yes
U. of Colorado	Denver, Col.	Plant Layout and Material Handling	Feb & Sept	9 weeks	$10.00	Yes
Cornell U.	Ithaca, N. Y.	Manufacturing Engineering Seminar	June 12-15	4 days	$100.00	Yes
Dartmouth Coll.	Hanover, N. H.	Methods Improvmt.	Spring	4 hrs, 14 weeks	On request	No
Fenn College	Cleveland, Ohio	Material Handling	Feb & Sept	1 eve, 16 weeks	$30.00	Yes
U. of Florida	Gainesville, Fla.	Plant Layout and Material Handling	Feb & Sept	4 hrs, 16 weeks	On request	No
General Motors Institute	Flint, Mich.	Material Handling	Mar thru Aug	7 hrs, 12 weeks	On request	No
Georgia Inst. of Technology	Atlanta, Ga.	Material Handling	Jan, March June & Sept	5 hrs, 10 weeks	$50.00	No
U. of Houston	Houston, Texas	Material Handling Systems	Jan	3 hrs, 16 weeks	$48.00	Yes

Reference List of Material Handling Courses (cont'd)

Name of Institution	Location	Topics	Starting Dates	Duration	Fees or Tuition	Open to Outside Enrolmt.
U. of Illinois	Urbana, Ill.	Plant Layout and Material Handling	Feb & Sept	1 semester	On request	No
Illinois Inst. of Technology	Chicago, Ill.	Material Handling I	Feb & Sept	1 eve, 16 weeks	$56.00	Yes
Illinois Inst. of Technology	Chicago, Ill.	Material Handling II	Feb	1 eve, 16 weeks	$56.00	Yes
Illinois Inst. of Technology	Chicago, Ill.	Material Handling I	Feb & Sept	3 hrs, 17 weeks	On Request	No
Iowa State Col.	Ames, Iowa	Material Handling	Sept	1 semester	$20.00	Yes
U. of Kansas	Kansas City, Kan.	Conference on Material Handling	Fall	1 day	$10.00	Yes
Lafayette Coll.	Easton, Pa.	Plant Layout and Material Handling	Feb	4 hrs, 14 weeks	On request	No
Lawrence Inst. of Technology	Detroit, Mich.	Material Handling	Jan	2 hrs, 12 weeks	On request	No
Lawrence Inst. of Technology	Detroit, Mich.	Material Handling	Feb	1 eve, 20 weeks	On request	No
Lincoln Extension Institute	Cleveland, Ohio	Material Handling	Correspondence Course	Can be completed in 2 months.	$45.00	Yes
U. of Louisville	Louisville, Ky.	Plant Layout and Material Handling	Jan & Sept	2 hrs, 16 weeks	$28.00	Yes
Marquette U.	Milwaukee, Wis.	Material Handling Conference	March	3 days	$54.00	Yes
U. of Massachusetts	Amherst, Mass.	Factory Planning	Feb	1 semester	On request	No
Matl. Handling Training Conf.	Lake Placid, N. Y.	Material Handling	June 16-29	2 weeks	$950.00	Yes
McGill Univ.	Montreal, Can.	Material Handling	Oct	1 semester	$30.00	Yes
U. of Michigan	Ann Arbor, Mich.	Plant Layout and Material Handling	Feb & Sept	1 semester	On request	Yes
U. of Minnesota	Minneapolis, Minn.	Material Handling and Packaging	Jan & March	3 hrs, 10 weeks	On request	No
U. of Montreal	Montreal, Can.	Material Handling	Nov	1 semester	$40.00	Yes
National Metal Trades Assn.	Chicago, Ill.	Material Handling	October 10	2 hrs, 10 weeks	$55.00	Yes
U. of Nebraska	Lincoln, Neb.	Management Eng.	Sept	3 hrs, 15 weeks	$90.00	Yes
New York City Community Coll.	Brooklyn, N. Y.	Industrial Plant Planning	Feb & Sept	1 semester	On request	No
North Carolina State College	Raleigh, N. C.	Plant Layout and Material Handling	Jan	1 semester	$35-N.C. res. $65-others	Yes
Northeastern U.	Boston, Mass.	Complete Curriculum Leading to Degree	Jan & Sept	varied	$40.00 per course	Yes

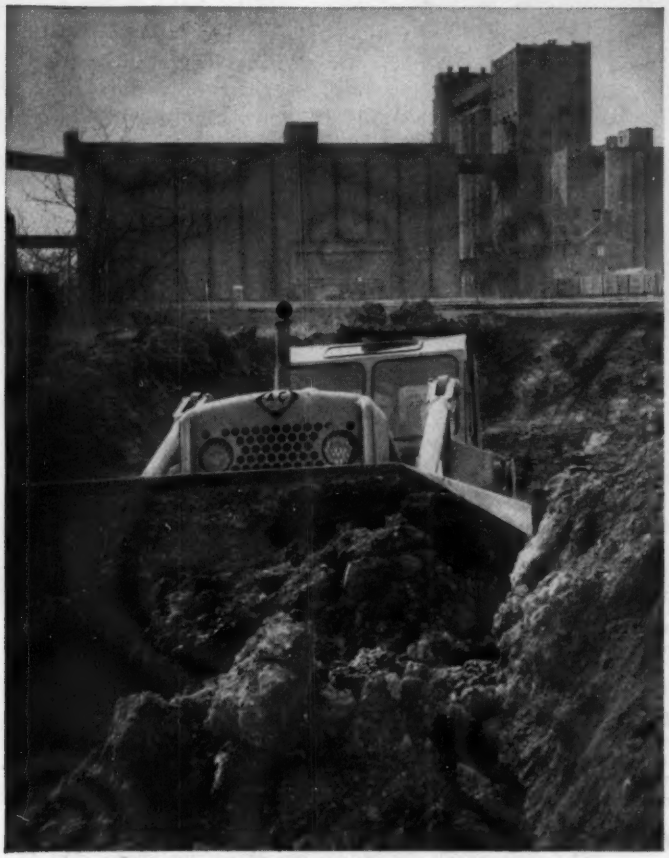
Reference List of Material Handling Courses (cont'd)

Name of Institution	Location	Topics	Starting Dates	Duration	Fees or Tuition	Open to Outside Enrolmt.
Northwestern U.	Evanston, Ill.	Material Handling	Feb	1 semester	On request	No
Northwestern U.	Chicago, Ill.	Material Handling	Feb	1 eve, 16 weeks	$35.00	Yes
Northwestern U.	Chicago, Ill.	Material Handling Top Mgt. Lectures	Sept	1 eve, 10 weeks	$75.00	Yes
U. of Notre Dame	South Bend, Ind.	Production Eng.	Feb & Sept	1 semester	On request	Yes
Ohio Mechanics Institute	Cincinnati, Ohio	Material Handling	Feb & Sept	16 weeks	$24.00	Yes
Ohio State U.	Columbus, Ohio	Advanced Methods in Material Handling	Jan	12 weeks	On request	No
Oklahoma A & M	Stillwater, Okla.	Factory Planning	Feb	16 weeks	$84.00	Yes
Oregon State College	Corvallis, Ore.	Material Handling and Plant Layout	Feb	10 weeks	On request	Yes
Pennsylvania State U.	State College, Pa.	Factory Planning	Feb & Sept	5 hrs, 16 weeks	On request	Yes
Pennsylvania State U.	State College, Pa.	Automation	Feb	On request	On request	Yes
Pennsylvania State U.	University Park, Pa.	Seminar on Automation	June 9-14	6 days	On request	Yes
Pittsburgh Chapter, AMHS	Pittsburgh, Pa.	Material Handling Workshop Seminar	Jan	1 eve	On request	Yes
Purdue U.	Lafayette, Ind.	Plant Layout	Sept	16 weeks	On request	No
Purdue U.	Lafayette, Ind.	Institute for Packaging	Feb-March	4 weeks	$150.00	Yes
Purdue U.	Lafayette, Ind.	Material Handling Conference	Feb	2 days	$20.00	Yes
Rochester Inst. of Technology	Rochester, N. Y.	Material Handling	Sept	2 hrs, 24 weeks	$42.00	Yes
Rutgers U.	New Brunswick, N. J.	Plant Layout and Material Handling	Feb	15 weeks	$33.00	No
Rutgers U.	Newark, N. J.	Material Handling	Feb & Sept	1 eve, 16 weeks	$22.00	Yes
Ryerson Inst.	Toronto, Can.	Material Handling	Oct	1 semester	$20.00	Yes
Southern Technical Institute	Chamblee, Ga.	Material Handling	Jan, March & Sept	2 hrs, 12 weeks	$24.50	Yes
Stevens Inst. of Technology	Hoboken, N. J.	Material Handling	Sept	16 weeks	$45.00	Yes

Reference List of Material Handling Courses (cont'd)

Name of Institution	Location	Topics	Starting Dates	Duration	Fees or Tuition	Open to Outside Enrolmt.
Stevens Inst. of Technology	Hoboken, N. J.	Industrial Packaging	Feb	16 weeks	$45.00	Yes
Syracuse U.	Syracuse, N. Y.	Material Handling	Sept	3 hrs, 14 weeks	$75.00	No
Temple U.	Philadelphia, Pa.	Material Handling	Jan	1 eve, 14 weeks	$45.00	Yes
U. of Tennessee	Knoxville, Tenn.	Material Handling	Jan	10 weeks	$24.00	No
Texas Technological Coll.	Lubbock, Texas	Industrial Plant Design	Feb & Sept	1 semester	On request	No
Toledo U.	Toledo, Ohio	Material Handling	Feb	1 semester	On request	Yes
Tulane U.	New Orleans, La.	Material Handling	Oct	1 eve, 16 weeks	$45.00	Yes
Traffic Managers Institute	New York, N. Y.	Material Handling and Warehousing	Sept	26 weeks	$100.00	Yes
UCLA	Los Angeles, Calif.	Plant Layout and Material Handling	Feb & Sept	1 semester	$48.00	No
UCLA	Los Angeles, Calif.	Chice of 4 Courses out of 24 offered	Jan	1½ hrs, 10 days	$350.00	Yes
UCLA	Los Angeles, Calif.	Material Handling	Oct	1 semester	$18.00	Yes
Virginia Polytechnic Institute	Blacksburg, Va.	Plant Layout and Material Handling	Jan	10 hrs, 10 weeks	On request	No
Washington U.	St. Louis, Mo.	Plant Layout and Material Handling	Feb	6 hrs, 15 weeks	On request	No
Washington U.	St. Louis, Mo.	Plant Layout and Material Handling	Feb	1 eve, 15 weeks	$66.00	Yes
Washington U.	St. Louis, Mo.	Introduction to Material Handling	Feb	1 eve, 15 weeks	$40.00	Yes
Washington U.	St. Louis, Mo.	Advanced Material Handling	Feb	1 eve, 15 weeks	$40.00	Yes
Wayne State U.	Detroit, Mich.	4 courses in Material Handling, also many other related courses.	Feb & Sept	each course 2 semesters	$25.00 per course per semester	Yes
Wentworth Inst.	Boston, Mass.	Plant Layout and Material Handling	Feb	1 semester	On request	No
U. of Wichita	Wichita, Kan.	Plant Layout and Material Handling	Feb	3 hrs, 18 weeks	$30.00	Yes
U. of Wisconsin	Madison, Wis.	Material Handling	Feb	3 hrs, 18 weeks	$15.00	Yes

Staley solves waste disposal problem with an Allis-Chalmers tractor shovel



Cuts the trench. The first step in Staley's landfill system is to cut a trench. Their Allis-Chalmers HD-11G, with 111 net engine hp and a large-capacity hydraulic system, easily handles tough excavating. It is also mobile enough to carry excavated material to conveniently located stockpiles.

Adopts highly successful landfill system

Most plants have one by-product and one problem in common. The by-product is waste and the problem is how to dispose of it. Staley Manufacturing Company, Decatur, Illinois, disposes of both the waste and the problem with an Allis-Chalmers HD-11G tractor shovel.

By adopting the sanitary landfill system, this large manufacturer of soybean and corn products now disposes of refuse quickly and cleanly. There are no unsightly dumps . . . no hillside "smudgepots" . . . no breeding places for insects and rodents. Further, the system requires a minimum of man power and equipment. This picture story describes how one Allis-Chalmers HD-11G tractor shovel handles Staley's three-step landfill operation.

• • •

This versatile machine can help solve your waste disposal problem—and double as a material handling and yard maintenance machine. Write for free literature on all four sizes of tractor shovels from 1½ to 4 cu yd, or see your Allis-Chalmers construction machinery dealer.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION,
MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

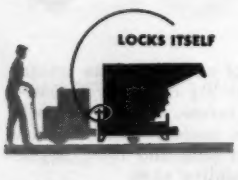
Spreads and compacts refuse. A truck dumps refuse at the head of the trench. The HD-11G then pushes or carries refuse with the bucket and spreads it in the ditch. Utilizing its 32,000 lb of weight, the crawler tractor compacts the material to a small fraction of its original volume.

Seals it in forever. At the end of each day, the tractor shovel takes dirt from stockpiles—2¼ cu yd at a pass—and spreads it over compacted refuse, leaving smooth, clean, level land. In many cases, useless lowlands have been reclaimed by the landfill system and later put to valuable use as playgrounds or building sites.

Circle No. 4 on Reader Service Card for more information

This dump hopper and your lift truck can

cut hand unloading costs 50%



Here is the most efficient and economical means of handling wet or dry, hot or cold bulk materials . . . such as scrap metal . . . small castings and punch press parts . . . soybean meal . . . hot brass ingots . . . pickles . . . cinders. And in hundreds of industries this one fact has been proved . . . *Roura Self-Dumping Hoppers cut hand unloading costs 50% or more.*

FITS YOUR LIFT TRUCK

A Roura Self-Dumping Hopper will fit any standard lift truck . . . attached or detached in 3 seconds . . . can't slip off. Pick up is swift and simple . . . forks or platform slide easily into pockets in the underframe of the hopper.

ONE MAN OPERATION

Your lift truck operator picks up the loaded hopper . . . transports it to its destination . . . trips the release catch . . . and the Roura does the rest. It automatically dumps its load . . . rights itself . . . locks itself . . . and is ready for another load.

STURDY WELDED CONSTRUCTION

Roura Hoppers are built of ¼" steel plate. Continuous arc-welded seams fuse the heavy sections into a single unit. They're braced at all critical points and carefully balanced for smooth action. Available in five sizes from ½ to 2 yard capacities. Can be equipped with live skids or fitted with malleable, rubber tired or plastic wheels.

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ROURA
Self-Dumping
HOPPER

See how the Roura Self-Dumping Hopper operates . . . read case histories of the ways it is saving time and money in many types of industry. For your free copy, clip this coupon to your business letterhead, sign your name and mail to

ROURA IRON WORKS, INC.
1411 Woodland Ave., Detroit 11, Mich.

If you're in a hurry, phone us collect, Townsend 8-3560

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PUT IT ON WHEELS . . .

(*Continued from page 67*)

the medium and heavy duty class as well. During the past 10 years, cold forgings have become very popular in light and medium-duty caster construction.

Oil-impregnated steel or bronze bearings are now installed in many casters. These are products of powder metallurgy, a fairly new field. The same technology also is being used to produce metal wheels in smaller sizes, where the volume is great.

Functional Styling

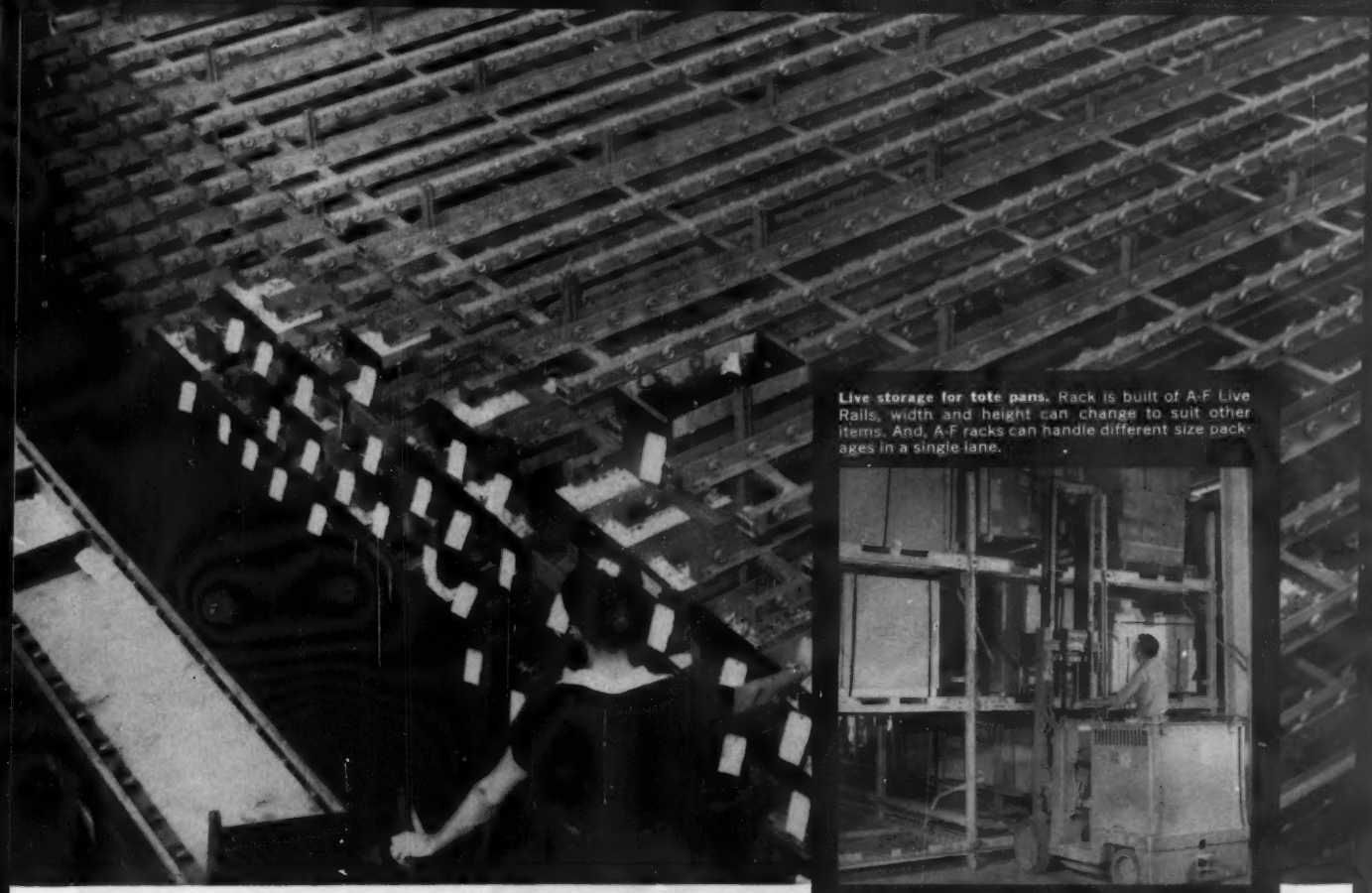
Product appearance also has progressed since the early days of casters and floor trucks. Modern designs are more streamlined. Aesthetic features get greater attention, with the result that today's equipment looks well-proportioned and compact, instead of awkward or clumsy.

The influence of color also is apparent. Casters of years ago were either unpainted or finished in a dull hue, whereas the modern trend is toward bright, attractive colors. Metal is sometimes plated with cadmium or other suitable material. One of the latest innovations is colored rubber tires. The familiar vulcanized tread is black by tradition, but now is available in white, red and other shades.

There have been a number of other changes made over the years which, although not revolutionary in themselves, have contributed greatly to the usefulness and quality of casters. Smooth, hardened raceways assure easy swiveling and long life. Wheel brakes and swivel locks provide greater safety in many applications. Casters with spring-type or knee-action suspension are effective where shocks must be absorbed, particularly in trailer service.

Basic Improvements

Experimentation has led to basic improvements in caster design and construction. Determination of the optimum offset for a given size and type of wheel has resulted in casters which swivel more easily than those of the past. In general,



Live storage for tote pans. Rack is built of A-F Live Rails, width and height can change to suit other items. And, A-F racks can handle different size packages in a single lane.

Size and weight of load is virtually unlimited! This heavy duty rack made of A-F rollers, stores tons of fire brick awaiting installation in furnaces.

A-F LIVE STORAGE RACKS

Increase the usable cube of your warehouse as much as 300%!

By putting aisle space to work, using available headroom, simplifying access to stored items—A-F Live Storage Racks give you many cost-saving benefits. You get more usable cube—as much as 3 times more—depending, of course, upon your present storage method. Here are specific examples of space saving and other important live storage benefits.

Case 1—A large warehouse organized 300 ft. of their stored palletized items into a live storage rack 20 ft. wide with 6 decks high. Pallets were eliminated. Rack delivers packages to centralized order picking area. Daily savings in time and shoe leather are huge.

Case 2—In the shipping room of a leading textile manufacturer, rigid first-in first-out control used to require strict supervision, excessive labor. How excessive? With their new A-F Live Storage Rack, picking an average order now takes 1 hour—instead of the 15 hours previously required! With live storage FIFO control is automatic and foolproof. Inventory taking is greatly simplified, costly errors are eliminated.

Case 3—A large mill reports that by planning their new warehouse to include live storage racks, they were able to make the building smaller. The savings in construction cost paid for the rack! The resulting live storage economies are money-in-the-pocket from the very first day.

A-F engineers will gladly survey your present storage facilities, submit suggestions on cost saving improvements and submit a proposal. Write today for complete details. Dept. QD-7

A-F

A-F founded the package conveyor business in 1901

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Custom Engineered Conveyor Systems
Packaged Conveyors—Wheel, Roller, Belt, Trolley
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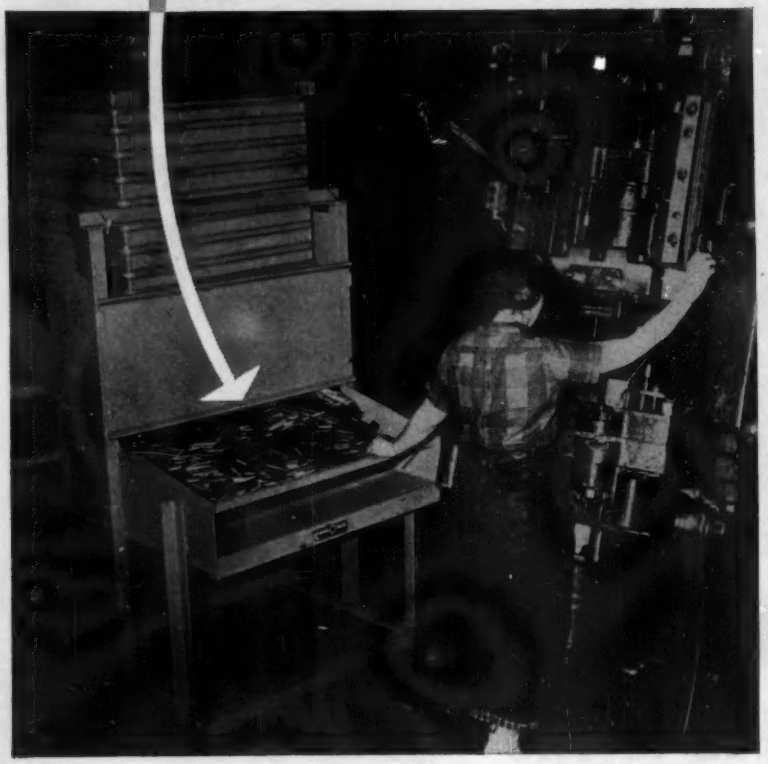
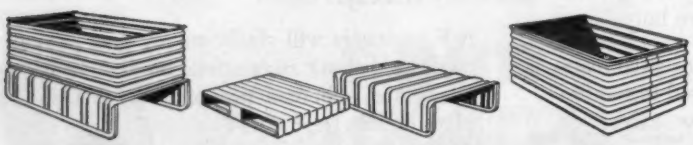
AUTOMATIC FLOW



with Work-O-Matic* box and stand

TEAMING the Work-O-Matic drop-bottom box with Union Metal's specially designed positioning stand means uninterrupted feeding of parts-in-process at proper working level. Result—operator and machine receive a continuing supply of materials . . . no waiting . . . no lost production . . . no stoop, stretch or bend.

In addition, Union Metal offers industry's broadest line of conventional type material handling containers. Write for complete catalog information. Address The Union Metal Manufacturing Company, Canton 5, Ohio.



*Patent No. 2,445,038

UNION METAL
Material Handling Equipment

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casters now are built to closer tolerances than they formerly were.

A significant milestone in caster history was the adoption, just last year, of the first Industrial Caster Standard, developed by the Caster & Floor Truck Manufacturers' Association. This will permit not only a substantial reduction in spare parts inventories, but also greater interchangeability of parts that will be available from more sources.

The widespread use of spanner bushings in caster construction followed naturally the adoption of commercial roller bearings. A spanner bushing permits both ends of the axle to be drawn up tightly, thus unifying and strengthening the entire assembly. Also, today's popular locknuts have replaced the older riveted or cotter pin designs.

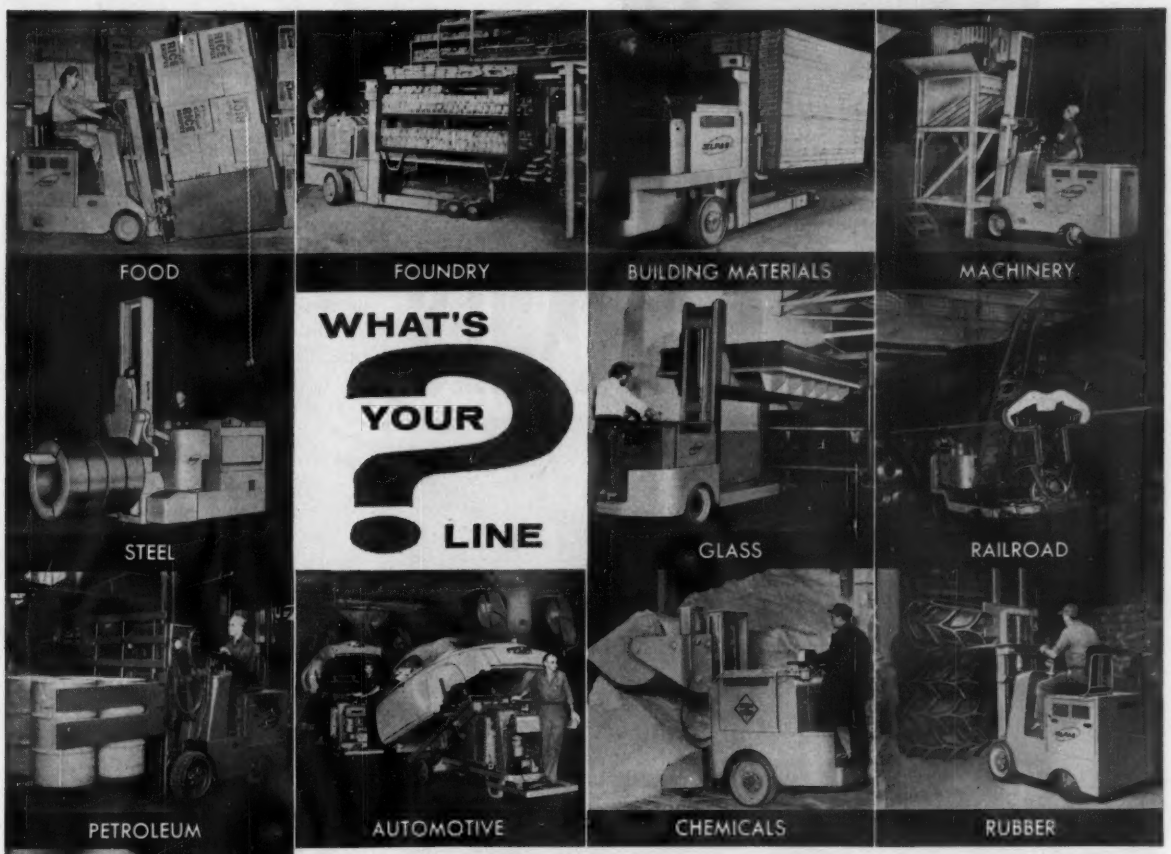
Because the modern spanner is hardened and ground, it provides a smooth, long-wearing inner race for the cage-type roller bearing. It also makes feasible the use of effective bearing seals in wheel assemblies, another fairly recent development.

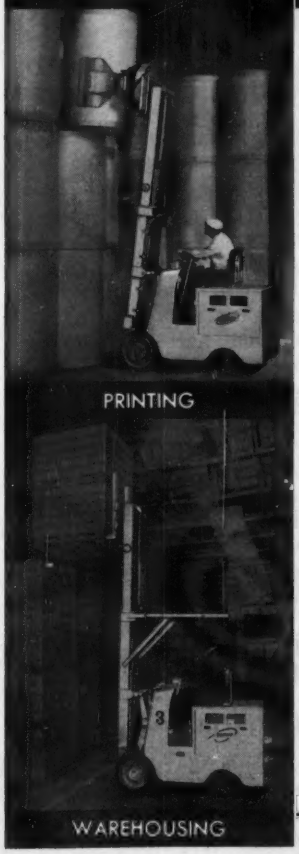
Swivel Assemblies

Improvement in caster swivel assemblies, over the years, has been almost as pronounced as the progress made in the field of wheel bearings. The machined cylindrical rollers used at one time are now outmoded. Loose steel balls, whose use dates back many years, still retain wide popularity. In many modern casters, however, these balls roll in raceways which are machined for smooth swiveling and hardened for long life. Today, precision tapered thrust bearings and self-contained main load bearings are found in many heavy-duty casters.

Industrial Wheel Design

In the early 1900's, semi-steel wheels were not the only type available, despite their predominance. For special applications—floor protection in particular—end wood wheels, canvas cushion wheels and hard fiber wheels were marketed. Usually, these consisted





ELPAR® TRUCKS *can cut your costs*

Here are typical savings with ELPAR trucks:

GROCERY CHAIN . . . ELPAR truck unloads boxcars 60% faster.

PIPE MANUFACTURER . . . 2 ELPAR trucks work more than 280 hours a week, yet—during 63 months' combined use—upkeep averages only $3.36 per truck-month.

STEEL MILL . . . ELPAR unit does job that once tied up a $200,000 bridge crane.

COLD STORAGE PLANT . . . ELPAR trucks cut man-hour costs 75%.

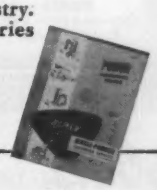
AIRCRAFT PRODUCTS MANUFACTURER . . . each of 16 ten-year-old trucks averages only one hour per month maintenance.

PRINTER . . . ELPAR roll truck cuts man-hour costs 79%.

RAILROAD REPAIR SHOP . . . ELPAR-engineered crane eliminates need for $80,000 yard improvement program.

FOUNDRY . . . 36-year-old ELPAR truck still puts in a full day's work.

There are ELPAR trucks specifically suited to *your* industry. Get the facts—write for General Catalog and Case Histories about your "line."



THE ELWELL-PARKER ELECTRIC COMPANY

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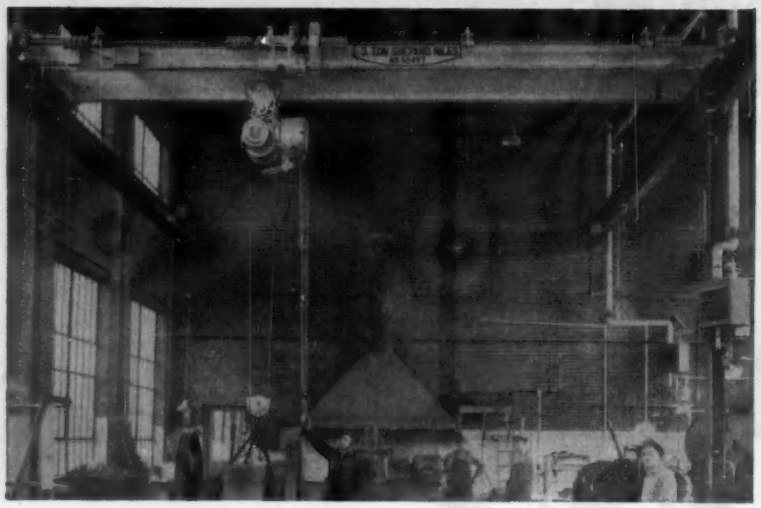
SHEPARD NILES

CRANES

Over-running... Under-running...

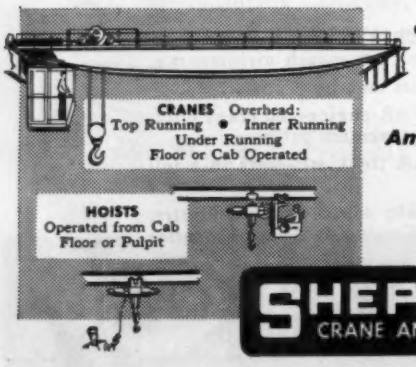
SINGLE BEAM CRANES



PERHAPS YOUR PLANT doesn't require a crane of double beam construction. Or possibly ceiling clearances would prevent its use. In either instance, a Shepard Niles Single Beam Crane might well be best for your use.

Shepard Niles Single Beam Cranes handle loads with precision, safety and at low operating cost. These cranes can be supplied with push button or pendant rope control for operation from floor, cab or remote location. Push-type or motor-driven trolley types of hoists, including close clearance units, are commonly employed on Single I-Beam Cranes.

Why not talk over your plant's load-handling requirements with an experienced Shepard Niles representative.



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America's Most Complete Line of Cranes and Hoists Since 1903

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of tread material clamped between two round metal plates. Their cost was considerably higher than semi-steel wheels of the same size. Some have been fairly widely applied over the years and, with improvements, are still serving well under conditions for which they were specifically designed.

No one type of wheel can be expected to perform satisfactorily under *all* conditions. However, from the wide selection available, there are wheels suitable for almost any particular requirement.

The general classification of "metal" wheels comprises a number of different kinds. In addition to the familiar semi-steel wheel, there are forged or drawn steel wheels, aluminum wheels, steel spoked wheels and wheels made from special alloys. Flanged track wheels and V-grooved wheels also are included in this category.

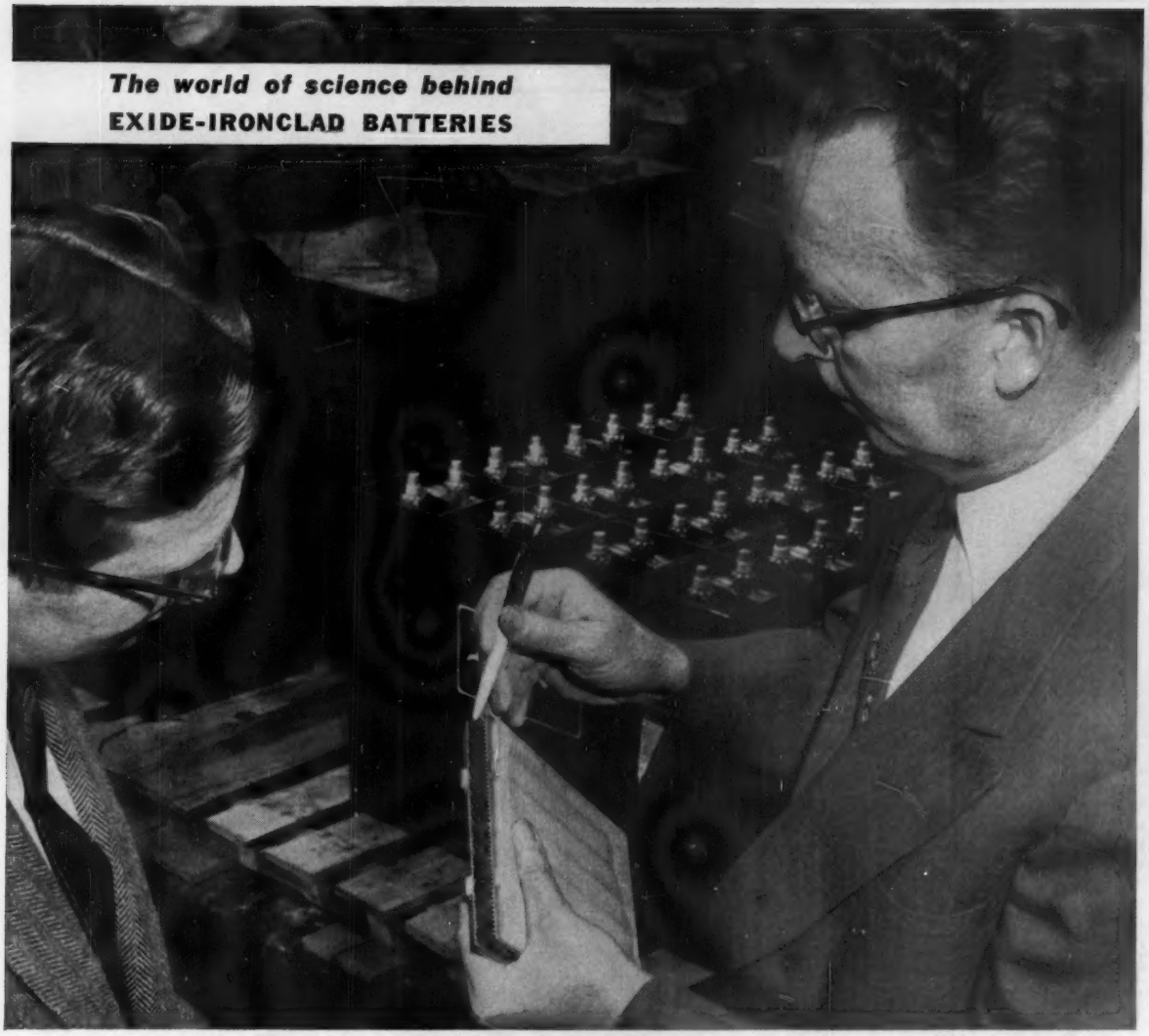
Many different types can be substituted to reduce the noise, floor wear, sparking or poor shock absorbing qualities of metal wheels. There are wheels of composition rubber, available with either soft or hard treads, in addition to the molded-on or demountable styles discussed earlier. Also, there are solid-cushion, semi-pneumatic and fully pneumatic wheels. These latter types have just come into popular usage during the last decade.

Molded plastic wheels have been used for many years, but the intense amount of research necessitated by World War II, plus the shortage of crude rubber, promoted their development. A definite need existed for non-sparking wheels with high capacity ratings, primarily in munitions factories. Molded plastic wheels filled the bill perfectly, and provided some floor protection besides. Only the war could justify their initial high prices, but rapidly increasing commercial applications have succeeded in bringing their cost down.

Progress In Floor Trucks

A few years ago—with the advent of powered equipment—it might have been logical to expect a decline in the popularity of non-

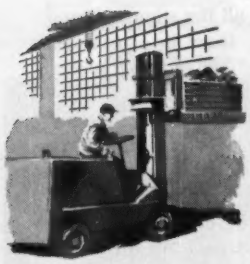
The world of science behind
EXIDE-IRONCLAD BATTERIES



Being interviewed is Curtice C. White, Senior Development Engineer.

"These channels actually cool the battery"

At the Exide Laboratories—**Reporter:** First, Mr. White, tell me what makes a battery hot.



White: Heavy loads—they often raise battery temperature as much as 20 degrees.

Reporter: How do the channels cool it?

White: The heated electrolyte rises to the top through the channels. Plates are cooled by electrolyte coming up from the bottom.

Reporter: Don't all batteries have channels?

White: Unfortunately, no. It is the tubular construction of the Exide-Ironclad positive plate that leaves these channels on both sides.

Reporter: What does this feature mean in battery performance?

White: Longer battery life, for one thing. The battery stays cooler. Has less incidence of hot spots. Plates operate at a more uniform temperature.

Reporter: Obviously this is an important feature of Exide-Ironclad.

White: Yes it is, but it's just one of many engineering details that contribute to its high capacity and long life.

Note to battery users: Whenever you order heavy duty batteries or the equipment that requires them, be sure to specify Exide-Ironclad. For detailed bulletin, write Exide Industrial Division, The Electric Storage Battery Co., Philadelphia 2, Pa.

THE ELECTRIC STORAGE BATTERY COMPANY Exide®

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STEEL WAREHOUSE "TAKES TO THE AIR"

Fig. 1 — TRAK-RAK fork lift at top of column, lifting bundle of steel rod. Unit serves 3 long aisles of racks.

TRAK-RAK SYSTEM INCREASES STORAGE SPACE, SAVES 22% CAPITAL BUILDING INVESTMENT

When A. C. Leslie & Co. Limited, needed more storage area in its busy Toronto steel warehouse, it decided to "reach for the ceiling" with a Chicago Tramrail TRAK-RAK System of vertical storage and handling. As a result, the company estimates it not only saved 22% of projected capital building costs, but increased the overall efficiency and speed of the Toronto operation. The company expects to gain further economies as the TRAK-RAK system is used to its full extent.

A 5 ton capacity toprunning TRAK-RAK Crane was installed in each of two 40 ft. wide bays to serve specially designed 18 ft. high material storage racks (Fig. 1). Each crane bridge has an overhead trolley, from which is suspended an electrically operated rotating column

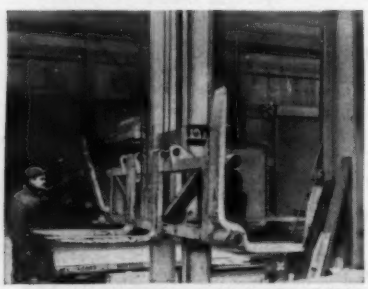

Fig. 2 — Carriage equipped with 2 pairs of forks. Operator is flopping outer forks up.

equipped with a special fork lift. All operations of the fork lift, which revolves to serve either side of the aisles, moves toward or away from the racks, and raises or lowers on the column, are controlled by the operator who rides with the carriage.

Two pairs of forks are mounted on the carriage. The outer forks may be flopped back (Fig. 2) leaving the inside forks in position for handling palletized or crated material. For handling long boxes, bars, etc., the outside forks are flipped back into working position.

A TRAK-RAK feature which added to handling speed and insured safe operation was the safety interlock switch system which prevents the column from running

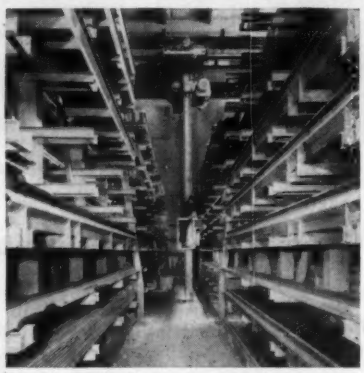

Fig. 3 — TRAK-RAK column requires minimum aisle space for operation.

into a rack and permits full rotation only when the unit is safely beyond the end of the racks.

The A. C. Leslie Company reports that a similar TRAK-RAK System installed in its Montreal warehouse permitted a 37% savings in capital building investment with equally good operating efficiency and economy.

For complete details on the TRAK-RAK System of vertical storage and handling, write the manufacturer:

CHICAGO TRAMRAIL CORPORATION
1328 S. Kostner Avenue • Chicago 23, Ill.

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PUT IT ON WHEELS

Continued

powered floor equipment. However, the markets for both types have expanded simultaneously. Perhaps the revolution brought on by powered vehicles has benefitted the caster and floor truck manufacturers by emphasizing greater efficiency in material handling.

Actually, the functions of hand-propelled and powered equipment are quite different. When used properly, the two seldom compete. Occasionally, both types are used together, as in the case of a powered tractor pulling non-powered trailers.

When the quantity of material moved is small, the distance traveled relatively short and the frequency of movement low, powered equipment can seldom be justified. Sometimes the lower initial cost of non-powered equipment is the deciding factor. In certain instances, narrow aisles, weak floors or other physical limitations of a plant dictate the use of manual equipment.

The user of non-powered floor equipment has a surprisingly large selection from which to choose the best item for his particular application. Just as a broad assortment of optional equipment enables an automobile factory to produce thousands of cars without any two being exactly alike, it is also possible for a floor truck manufacturer to build an astronomical number of different trucks. A single model may be offered in a wide variety of platform sizes, superstructures and running gear arrangements, with various types and sizes of wheels and optional extras, such as rubber bumpers and floor truck locks.

In spite of all the standard models available, there is a persistent and growing demand for special, custom-built trucks made to specifications for individual requirements. This demand for new developments in trucks is due to the advancement of handling techniques, thereby causing operational needs to advance. In direct contrast with this trend toward custom-built trucks is the ever-increasing use of dragline conveyors in terminals and warehouses. These

Among the thousands of users...

THE DEMPSTER DUMPSTER® SYSTEM

Helps Make Possible Plant-Wide Cleanliness and Sanitation at . . . ELI LILLY and COMPANY

Noted for its plant-wide cleanliness and sanitation, Eli Lilly and Company attributes much of the success of its efficient, sanitary handling of bulk materials to the Dempster-Dumpster System. In addition to the fire hazards, the unsanitary waste material accumulation and collection with conventional methods, the high cost of handling constitutes a further problem for many manufacturers. Thousands of users like Eli Lilly and Company have found the Dempster-Dumpster System helps to solve all these problems! One truck-mounted Dempster-Dumpster serves scores of big steel detachable containers, one-after-another. There is a container available or that can be built to suit the requirements of all materials, regardless of description. And one man, the Dempster-Dumpster driver, handles them all! Capacities up to 21 cu. yds. Payloads up to and over 36,000 lbs. Ask us to forward complete literature. Manufactured by Dempster Brothers, Inc.

Picking Up, Hauling and Dumping a 15 cu. yard Universal Container.

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successfully exploring new ideas to reduce your materials handling costs with the
DEMPSTER DUMPSTER SYSTEM

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HOOKS and LACERS

You can lace belts up to 12 inches wide all in one operation with Clipper Belt Hooks and Lacers. Until the Clipper hooks shown above were inserted into the jaws of the lacer, they were protected and held in place by a reinforced card that is easily stripped away once the hooks are in the lacer. The lacer jaws, exerting up to 45,000 lbs. of pressure, imbed the hooks firmly and uniformly across the width of the belt. And in the belt, each hook is separate from the others to give flexibility not possible with other methods of belt lacing. For unmatched speed, strength and flexibility, depend on the proved Clipper machine-lacing method.

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Detailed product information and case history examples of Clipper machine-lacing benefits are contained in Bulletin No. 157. Send for your free copy today.

Ask your Industrial Distributor for Clipper Products

Clipper BELT LACER COMPANY

990 Front Ave., N. W., Grand Rapids 2, Michigan

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PUT IT ON WHEELS

Continued

conveyors utilize mass-produced trucks, mostly of standardized construction.

While the increasing popularity of this latter system may seem paradoxical with the earlier statement that special trucks are becoming more important, the fact is that both are thriving simultaneously. Their parallel rise is no accident; it is the result of management's aim to increase efficiency and productivity by whatever means are necessary or available.

Specialized trucks promote efficiency because they are built to do a specific task. The customer does not have to use a standard truck that is "almost" perfect for the job. Tow-line trucks achieve the same objective. They reduce the unit cost of freight handling by combining flexibility with some of the precepts of automation.

Two-Wheel Hand Trucks

Users of two-wheel hand trucks also have benefitted from progress over the years. While, generally, these trucks have changed little fundamentally, special models for particular applications have been developed, such as drum-movers and appliance trucks. Refinements include a wide selection of running gear, along with such features as stair climbers, brakes and rubber handle grips. The high degree of utility which these trucks possess has enabled them to hold their own in today's highly mechanized environment. They are especially useful where conditions are cramped and distances involved are not great.

The healthy position of the non-powered floor equipment industry is likely to become even healthier as industry in general continues to place more emphasis on better material handling, and to learn how casters and floor trucks can be used more efficiently to reduce costs.

Many years ago, one of the pioneers in the non-powered floor equipment industry coined a motto: "Put in on wheels and keep it moving!" That principle is even more timely today than it was in his era.

FLOW

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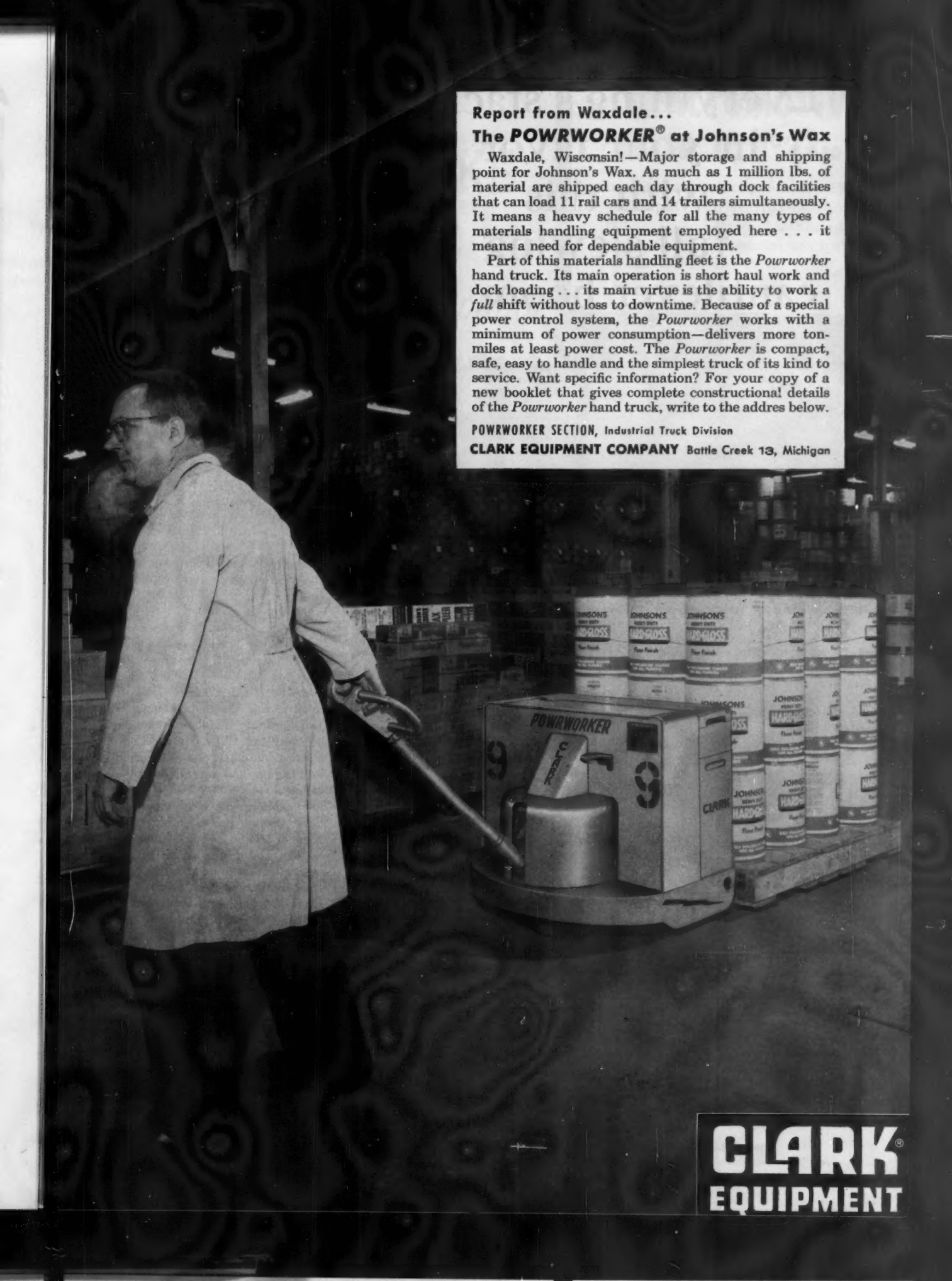

Report from Waxdale...

The *POWRWORKER*® at Johnson's Wax

Waxdale, Wisconsin!—Major storage and shipping point for Johnson's Wax. As much as 1 million lbs. of material are shipped each day through dock facilities that can load 11 rail cars and 14 trailers simultaneously. It means a heavy schedule for all the many types of materials handling equipment employed here . . . it means a need for dependable equipment.

Part of this materials handling fleet is the *Powrworker* hand truck. Its main operation is short haul work and dock loading . . . its main virtue is the ability to work a *full* shift without loss to downtime. Because of a special power control system, the *Powrworker* works with a minimum of power consumption—delivers more ton-miles at least power cost. The *Powrworker* is compact, safe, easy to handle and the simplest truck of its kind to service. Want specific information? For your copy of a new booklet that gives complete constructional details of the *Powrworker* hand truck, write to the addres below.

POWRWORKER SECTION, Industrial Truck Division

CLARK EQUIPMENT COMPANY Battle Creek 13, Michigan

CLARK®
EQUIPMENT

Everything's stacked in your favor with this full-slewing cantilever boom

Full selectivity allows stacking and grouping of dissimilar materials for conservation of yard space.

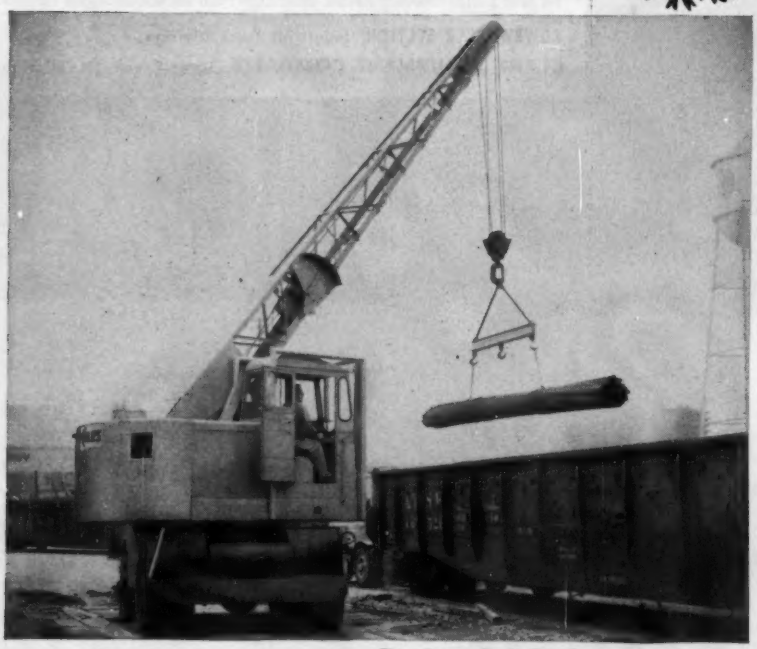

Photo Courtesy Pacific Tube Company, Los Angeles

Available L.P.G.-, diesel-, or gasoline-electric powered in capacities from 5 to 50 tons. Available on long-term lease arrangement, too. Write for new Coles fact-book, "101 Cost-Cutting Ways".

COLES

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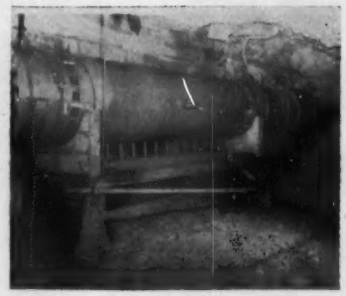
Dust Collector--Efficient To 99-Plus Per Cent



A type of dust collector, described as one-tenth to one-twentieth the size of comparable equipment, has been introduced to industry by the Joy Manufacturing Company. Called the Joy Microdyne, the new unit is a wet, inertial type.

Test figures, released by the company, show that the Microdyne has an efficiency of 99-plus per cent in collecting dust particles of five microns or greater—a micron is equal to one-twenty-five-thousandth of an inch.

Prototype models have been tested under actual working conditions at the Brackenridge, Pa. plant of Allegheny Ludlum Steel Corporation; a Butte, Montana, mine of the Anaconda Company; an Ishpeming, Michigan, iron mine of Cleveland Cliffs Mining Company; a phosphate processing plant in Florida; and several other locations.

The Microdyne is a cylindrical device having two essential parts; a mixer section and an eliminator section. The dust-laden air or gas enters the unit at its mixer section. Here the impingement takes place. Each dust particle is enveloped in water as it passes through a fine spray.

The air and entrained water enveloped dust pass through turning vanes as they enter the eliminator section. These vanes impart a helical motion which causes a centrifugal force. This force separates the entrained particles from the air. The dust-laden water is captured at the periphery of the eliminator section in blind louvers which are connected to a disposal sump at the bottom of the unit.

BIG LOADER MANEUVERS LIKE SMALL LOADER

in Midwest fertilizer plant

NO LOST TIME JOCKEYING AROUND Operator makes a right angle turn directly into bin from aisle. In fact, he can turn from a nine-foot aisle into a ten-foot bin! Made possible by bucket-over-drive-wheels design and small steering wheels in rear. This design means better traction and easier steering, too. In addition, power steering is now standard equipment!

The TL-10 is a BIG PRODUCER on both inside and outside materials handling. Let your Allis-Chalmers construction machinery dealer show you its maneuvering and load-getting advantages. See why

TRACTO *is a sure sign of modern design*

TRACTOMOTIVE TL-10 TRACTO LOADER®

combines big-capacity bucket (1¼-cu yd, heaped) with short, 11-foot turning radius . . . and the load-getting advantages of a tip-back bucket and hydraulic torque converter drive.

NO RUNNING ROOM NEEDED TO LOAD Instead of ramming or butting, operator just eases bucket into material and the hydraulic torque converter drive smoothly crowds in a heaping load. There is a scooping action, too, with the tip-back bucket. Operator has a full load before the booms are halfway up!

NO LOST TIME DELIVERING LOAD Operator just pulls a lever and he backs from the pile "on the double." Reverse is almost twice as fast as forward! He gets into travel position easily, quickly with power steering and short, 11-foot turning radius. Visibility and stability are excellent because the tip-back bucket enables operator to carry load low, close to cowl.

SOLD AND SERVICED BY YOUR ALLIS-CHALMERS CONSTRUCTION MACHINERY DEALER

Send For Free Descriptive Catalog On The Complete Line Of Tracto-Loaders

TRACTOMOTIVE

TRACTOMOTIVE CORPORATION, DEERFIELD, ILLINOIS

Circle No. 124 on Reader Service Card for more information

TRACTOMOTIVE CORPORATION, Dept. FL
Deerfield, Illinois

☐ Please arrange a demonstration of TL-10
☐ Send Catalog

Name.....

Title.....

Company.....

Address.....

City.....State.....

MODERN TRAFFIC CONTROL for MODERN PLANTS . . .

Plant operations are hindered when traffic flow is slow and inefficient because doors must be opened and closed manually. Stanley Magic Door Controls solve this problem, automatically opening and closing plant doors smoothly and quietly, enabling materials and personnel to move efficiently.

A Stanley Magic Door Control can be installed on any new or existing office, plant or warehouse door — or combination of doors — that swing, slide or fold and will give the most economical and efficient service possible. They are easy to install and require little maintenance. There are few moving parts and virtually nothing to wear out.

Whatever your traffic control problem, there is a Stanley Automatic Door Control that will meet your requirements. The Stanley Magic Eye (photo-electric) actuates the door when the beam is broken. Wall Push Plates or Kick Plates are suitable in certain applications and are particularly desirable in many industrial locations. The Stanley Pull Cord is the most economical way of controlling industrial doors. The doors open and shut at a pull of the cord.

Stanley pioneered in the development of automatic door controls and has been the recognized leader in this field for a quarter of a century. There are Stanley Magic Door Representatives in principal cities throughout the country. The Stanley Representative near you is qualified by extensive factory training and years of field experience to analyze your traffic control needs and recommend the door controls best suited to your specific requirements.

Plant modernization calls for automatic door controls that will speed traffic flow, save time, reduce maintenance and operating costs and increase overall plant efficiency. Investigate how Stanley Magic Door Controls can give your plant these important benefits.

Traffic FLOW

is quick, efficient . . . through

. . . . . **STANLEY**

automatic door openings

Save man-hours, reduce damage to doors and equipment, conserve conditioned air and improve working conditions by opening and closing plant doors *automatically* with Stanley Magic Door Controls. These controls can be applied to any new or existing door — or combination of doors — that swing, slide or fold. Stanley Representatives will provide a complete engineering service.

Write for new folder — "Plant Ideas to Make Efficiency Grow" — to Magic Door Sales, Stanley Hardware, Division of The Stanley Works, Department G, 595 Lake Street, New Britain, Connecticut.

AMERICA BUILDS BETTER AND LIVES BETTER WITH STANLEY

STANLEY

This famous trademark distinguishes over 20,000 quality products of The Stanley Works—hand and electric tools • drapery, industrial and builders hardware • door controls • aluminum windows • metal parts • coatings • steel and steel strapping—made in 24 Stanley plants in the United States, Canada, England and Germany

Circle No. 116 on Reader Service Card for more information

PACKAGING AND SHIPPING SECTION

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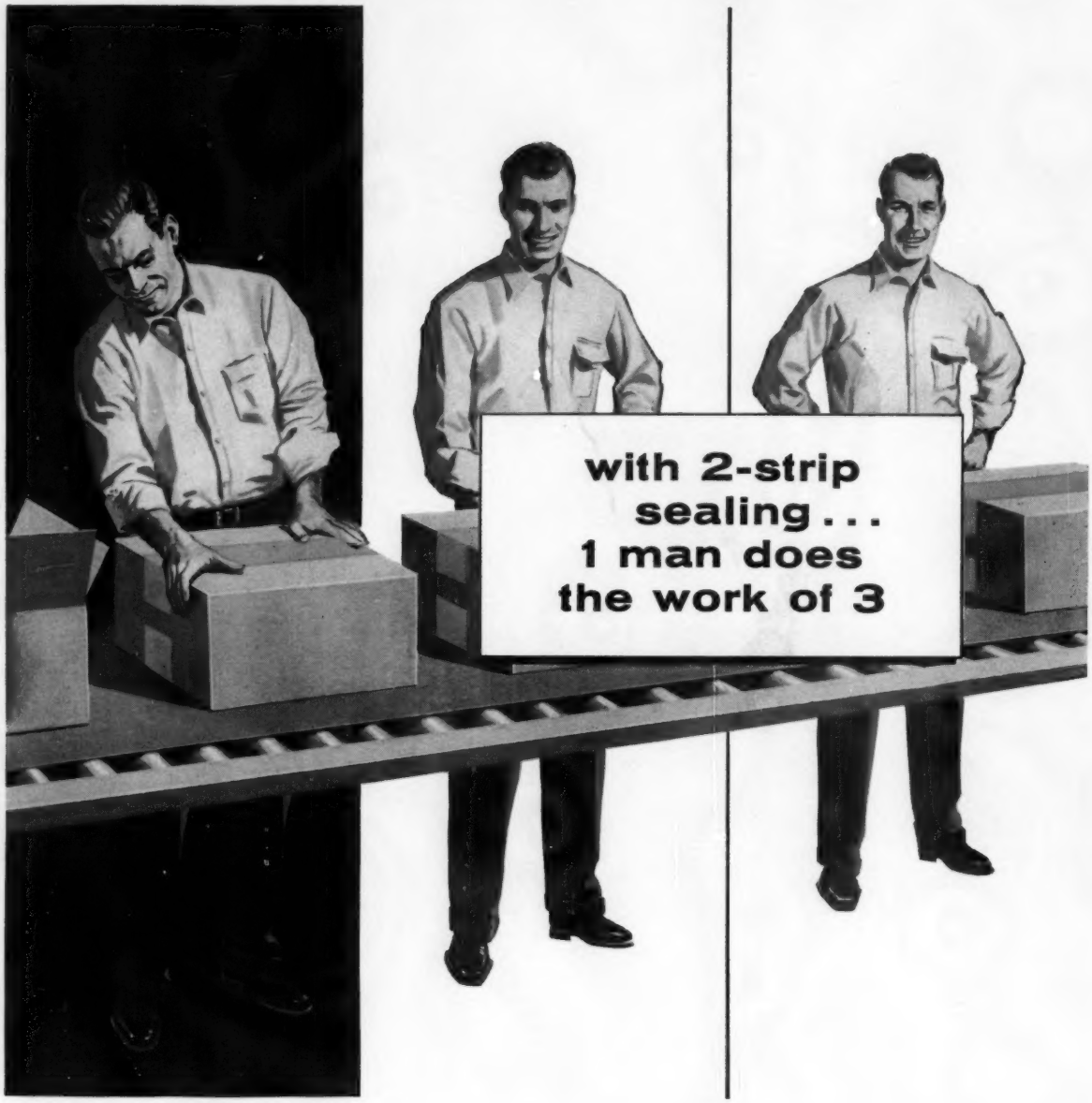
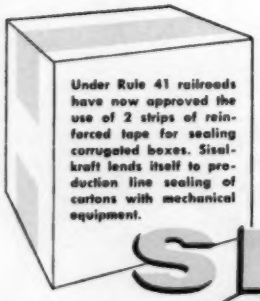


Save 2/3 on Carton Sealing Labor!


Under Rule 41 railroads have now approved the use of 2 strips of reinforced tape for sealing corrugated boxes. Sisalkraft lends itself to production line sealing of cartons with mechanical equipment.

Because Center Seam Sealing with Sisalkraft Sealing Tape *requires only 2 strips* you save labor. Manpower is released for other jobs. Tape and time are saved also. Write for more facts about the labor saving uses of Sisalkraft reinforced tape and nearest source of supply. American Sisalkraft Corporation, Attleboro, Mass. Makers of sealing tape stock for the Gummed Paper Industry.

SISALKRAFT
Reinforced **SEALING TAPE**

Circle No. 9 on Reader Service Card for more information

SPECIAL RACK-FITTED CARS, provided by the Great Northern Railroad are used, when available, for shipment of wirebound pallet bins loaded with 2240 pounds of silicon metal. When the bins are shipped in ordinary cars, they are stacked two-high, one resting directly on another. One car holds from 40 to 50 pallet bins.

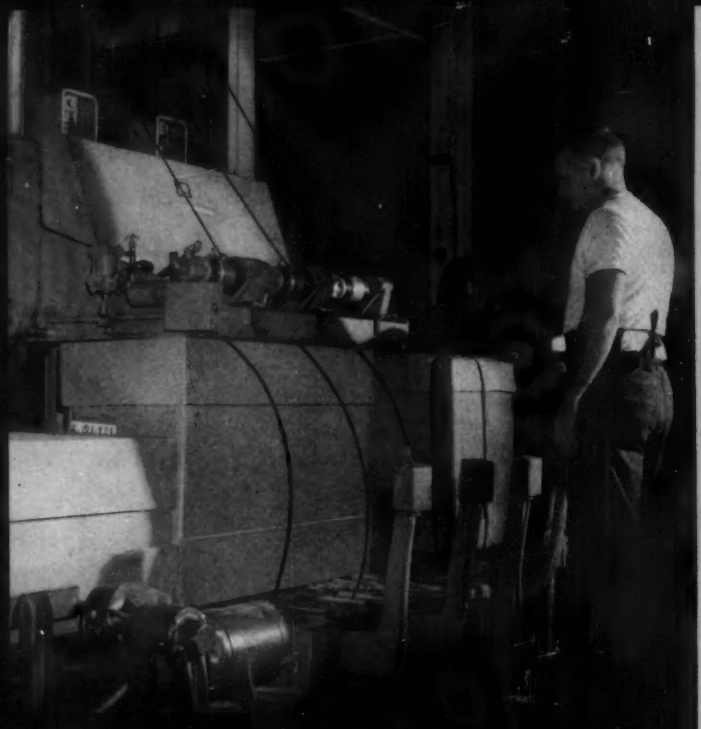
Bins Used by Smelter for Bulk Shipments Insure . . .

No Mixing in Mixed Loads

BY REPLACING bulk shipments with 2240-pound packages of metallurgical alloys, the Keokuk Electro-Metals Co. has brought about speedier and more economical material handling both for itself and its customers. The new method insures safe shipment of mixed loads of different alloys.

Much of the company's production of silicon and ferro-silicon alloys at its smelter plant at Rock Island, Wash., now is shipped in wirebound pallet bins 2240 pounds in a container. Receivers' acceptance has been enthusiastic and Keokuk Electro-Metals Co. now finds customers demanding that the product be packaged instead of shipped in bulk.

Both silicon metal and ferro-silicon alloys are made at the company's Rock Island smelter from silica rock, mined locally, combined with scrap iron, carbon and other components added with the precision of medical prescriptions. More than a dozen different sizes and



ACME STEEL **STEEL STRAPPING** machine compresses and straps telescope boxes of textiles. *(Idea No. S6-6)*

ACME STEEL **STEEL STRAPPING** unitizes aluminum ingots for better handling and storage. *(Idea No. U6-16)*

ACME STEEL **STEEL STRAPPING** cans of chemicals to skids increases handling, storage efficiency. *(Idea No. S3-25)*

AIM* for product protection

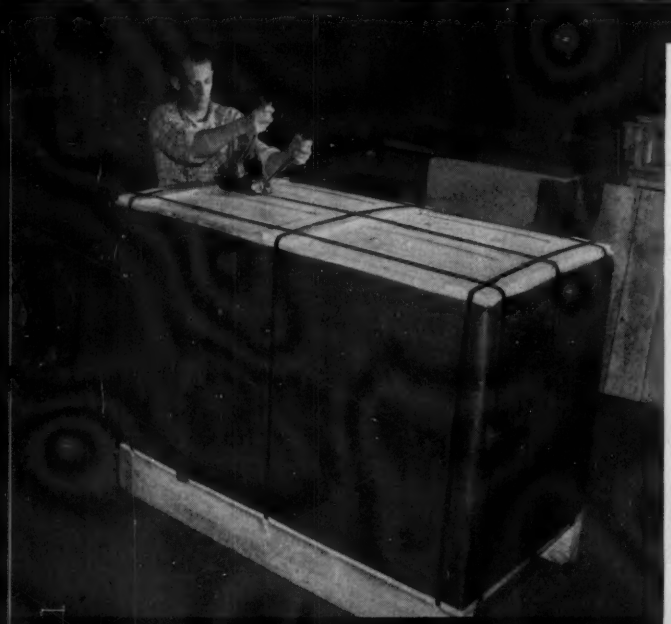
Product protection through Acme Idea packaging can bring you the important benefits of safe, secure packs with increased speed and labor—material economies. Throughout the entire scope of industry Acme Steel Ideas, equipment and materials are protecting and speeding products from production line to final user. You owe it to yourself to learn how.

A product protection wise Acme Idea Man is located near your plant. He is immediately available to discuss your packaging problems and provide you with hundreds of in-use Acme Steel Strapping Ideas for better packaging and shipping. The seven Ideas shown on these pages are included in the Ideas-In-Action Report files your Acme Idea Man will be pleased to show you. Acme Steel has developed many Ideas from experience in all types of industry. Among them are sure to be applications that can be applied to your particular operations with important time and dollar benefits to you.

An Acme Idea Man is ready to offer you Ideas-In-Action, plus his training, experience and steel strapping know-how without cost or obligation in any form.

Your *Acme Idea Man can be contacted at the nearest Acme Steel office. Look under "Steel Strapping" in your classified directory, or send the coupon for full information.

ACME STEEL **STEEL STRAPPING**



ACME STEEL **STEEL STRAPPING** skid-loads sheets of paper for safe secure shipping. *(Idea No. S3-24)*

ACME STEEL **STEEL STRAPPING** machine bundles boxes of kitchen utensils for easier handling. *(Idea No. S2-14)*

ACME STEEL **STEEL STRAPPING** unitizes corrugated boxes for efficient mechanized truck loading. *(Idea No. S3-20)*

ACME STEEL **STEEL STRAPPING** bundles lumber into compact units for fast, easy job-site delivery. *(Idea No. U6-12)*

2 IDEA BOOKS

These two information packed Acme Steel Idea Books are available to you on request. They will provide dozens of clues to better ways to package and protect your products and plant output.

Write today for your choice of the above two Acme Steel Idea Books. Merely indicate the books you want on the coupon at the right and mail. Your request will be filled promptly, with no obligation.

Acme Steel Products Division
ACME STEEL COMPANY, Dept. PDS-77
Chicago 27, Illinois

Please send me the new Acme Steel Idea Books I have checked below:

- ☐ **Steel Strapping Catalog**
- ☐ **Unitizing Catalog**
- ☐ **Have an Acme Idea Man call.**

Name_____

Title_____

Company_____

Address_____

City_____ **Zone**____ **State**_____

Circle No. 2 on Reader Service Card for more information

grades of silicon and ferro-silicon alloys are produced and must be strictly segregated from each other during storage, handling, and shipping. The material is shipped to steel mills, foundries and aluminum plants all over the country.

The various alloys, carried by conveyors from smelting furnaces, formerly were stored in bins and shipped in bulk. The handling system then in use involved operation of costly mechanical equipment. Loading of "mixed" cars was either impossible or resulted a costly and time-consuming task to keep the various alloys from becoming mixed.

At destination of a shipment, the troublesome and costly material handling operations had to be repeated. And again care had to be taken to segregate different grades and sizes of alloys.

Wirebound Bin for Shipment

The bin now used consists of a one-piece wirebound mat that is folded to form the four sides and is attached to a heavy base of one-inch flooring on 4" x 4" runners. The ends of the mat are joined and closed with wire-loop fasteners. The inside intermediate cleats and the outside binding wires of the mat are spaced so that the greatest structural strength and resistance to distortion are built into the lower half of the bin to counteract weight of the contents.

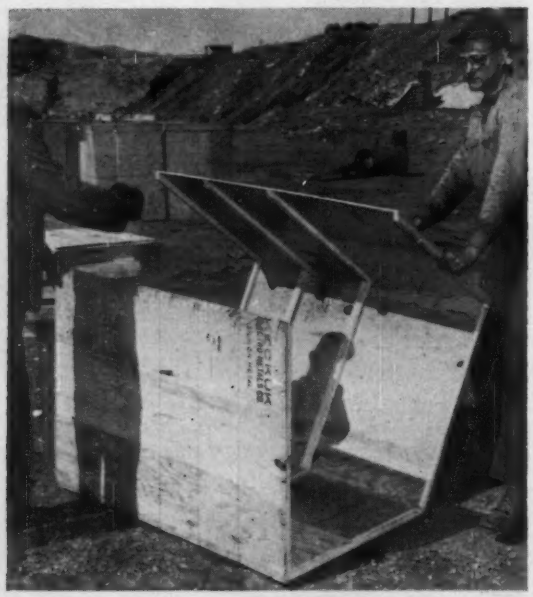
A bin is lined with heavy paper to prevent spillage when finely crushed metal is being packed, but material from two to 12 inches is packed without a liner.

Simple Packaging Operation

Packaging is fast, easy and inexpensive and is done in any one of three ways: direct from a conveyor leading from production; by front-end loaders from storage bins; by hand, when hand-sorting of the finished alloy is required.

Exactly 2240 pounds of silicon metal or ferro-silicon is packed into each container. Thus, both Keokuk Electro-Metals Co. and its customers can easily keep track of inventories and customers can more precisely control the dispensing of alloys of different compositions. In some steel plants and foundries, the wirebound bins are dropped into furnaces along with their loads. In other plants, empty bins are often used as storage containers or tote boxes.

The structurally strong wirebound bins packed with 2240-pound loads are easily moved by fork truck to storage areas or directly into freight cars. Two shifts of three men each can pack and load a car, one man driving the truck and the other two scooping the alloys



ONE-PIECE BLANK of pallet bin is folded into shape at the Rock Island, Wash. smelter of the Keokuk Electro-Metals Co. Closure of the open corner is accomplished simply by twisting wire-loop fasteners. Each bin weighs approximately 75 to 90 pounds, roughly 3-½ percent of the gross shipping weight of load.

PORTABLE BELT CONVEYOR is one of three methods used to load wirebound bins. Other methods are: directly from a conveyor leading from production department; by front-end loaders from the storage bins. This method permits careful segregation of the more than a dozen sizes and grades which the firm ships.

(*Continued*)

from a storage bin onto a portable belt conveyor that dumps it into the pallet bins.

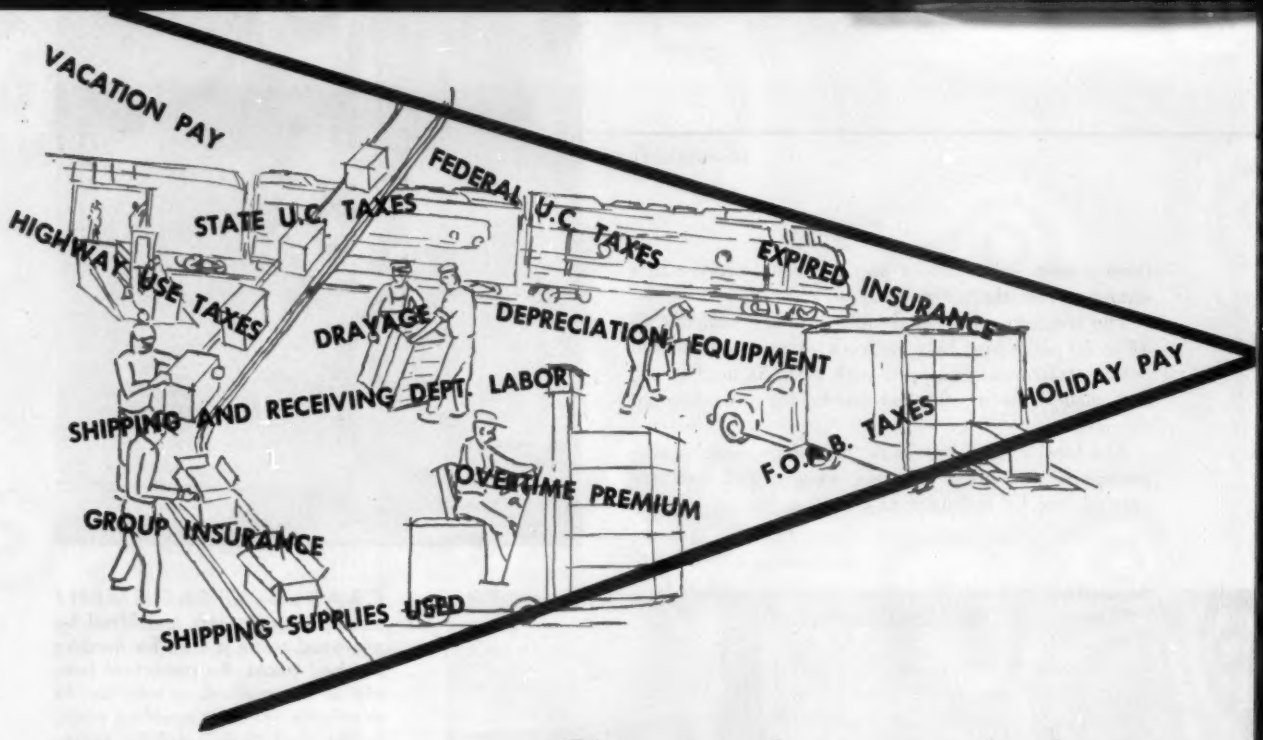
The specially equipped freight cars are loaded with 45 to 50 pallet bins by fork truck. A unique overhead cradle attachment equipped with forks is used to lift and place bins on flat-bed trucks for over-the-road shipment.

The bins weigh from 75 to 90 pounds, roughly 3½ percent of the gross shipping weight, and they are carried free by railroads as dunnage.

CRADLE ATTACHMENT equipped with forks and lifted by overhead crane is used for loading flat bed trucks. An important benefit of the method, in addition to drastically reduced handling costs, is the fact that carefully segregated contents of each bin will remain separate from other sizes and grades in other bins in shipment.

FORK TRUCK stacks filled bins in storage area (up to three high with safety) or places them directly into freight cars for immediate shipment. Railroads carry the bins free, as dunnage. Customers often drop bins into furnace with load.

Photos courtesy of Wirebound Box Manufacturers Association



Cost Accounting in Shipping Operations

Everyone is looking for better ways to find the answers to questions such as: How much did our shipping department cost us last year? How much last month? Is this as it should be, or is it excessive? How much shipping department expense will be attributable to Product X, Product Y, etc? According to the author cost accounting can supply the necessary answers to all those questions.

Contrary to the opinion of many manufacturers, cost accounting is not a rigid set of rules and systems, but rather a flexible tool which can be tailor-made to a particular industry, company, or department within an organization. It is in the flexibility of the tool that its money-saving values lies. Money-saving, to any manufacturer, means PROFIT.

Statement of Income

To better understand how cost accounting can be adapted to a shipping department let us review the fundamentals or composition of the Statement of Income. Basically this statement, no matter how simple or how elaborate it is, is based upon the following formula:

Net Sales		xxxxxxxxxxx
Less: Cost of Goods Sold:		
Material Used	xxxxx	
Direct Labor	xxx	
Manufacturing Exp.	xxx	xxxxxx
Gross Profit		xxxxx
Less:		
Administrative Exp.	xxx	
Selling Expense	xxx	xxxx
Net Profit		xxx

Often, it is within the framework of the "manufacturing expense" section of the "cost of goods sold"

SHIPPING DEPARTMENT EXPENSE

by Eugene F. Abel
Cost Accountant
Anderson Mattress Co.

SCHEDULE I
Shipping and Receiving Department Expense

Account Number	Account Name	Current	Year to Date
801.	Shipping and Receiving Dep't Labor	2,723.12	33,467.88
801A.	Overtime Premium	51.60	1,250.72
802.	Vacation Pay	38.04	484.92
803.	Holiday Pay	97.60	443.52
805.	State U. C. Taxes	62.40	1,066.68
806.	Federal U. C. Taxes		212.12
807.	F. O. A. B. Taxes	80.24	1,494.16
809.	Group Insurance	265.72	704.80
810.	Shipping Supplies Used		945.96
817.	Expired Insurance	132.32	1,646.24
818.	Depreciation, Equipment	152.00	1,976.00
819.	Drayage	191.52	2,449.88
821A.	Highway Use Taxes	12.60	450.08
TOTALS		3,807.16	46,592.96

Weight Shipped

	Line A	Line B	Line C	Line D	Total
Prior	2,454,956	1,220,976	566,588	4,875,468	9,117,988
Current	291,204	88,660		300,732	680,596
Total	2,746,160	1,309,636	566,588	5,176,200	9,798,584

Shipping Dep't. Expenses per Cwt. (This Month) $.5594
Shipping Dep't. Expenses per Cwt. (Cumulative) $.4755
Shipping Dep't. Expenses per Cwt. (Standard) $.50

that the shipping expenses are hidden. This further complicates an already-confusing situation—that of attempting to budget the manufacturing expenses, apply them to the cost of a product, and pro-rate them over product lines.

Why not simplify this by removing from the manufacturing expenses all those expenses which are attributable to the shipping department?

The administrative expenses and the selling expenses of a business are separated from the remaining costs. The reason for this is that the administrative and selling expenses are functions of the sales dollar; therefore, the sales dollar becomes the common basis for the application of these expenses. We speak of administrative expenses as being 6% or 8% of sales, and of selling expenses as being a given per cent of sales.

In these two areas, we have a common basis for applying the expense to the product.

Obviously, the more we can delete the composite of all expenses into groups with common bases, the easier becomes the application of these expenses to the product. The trick is in finding a common basis for a group of expenses.

In our shipping department, the one attribute which is common to all items which are shipped is weight. Whether bicycles, pumps, or mattresses, weight is a property common to all items. Each weighs a certain number of pounds.

This being so, then our shipping department expenses can be applied to the various items manufactured and shipped by using weight as the common basis.

By studying your records and finding the total weight shipped over a period of time, and then by dividing this weight into the total shipping department expenses, it is possible to determine a per-hundred-weight cost of operating the shipping department. If this record can be accumulated over an extended period of time, say for a year, it will tend to smooth out the peaks and valleys in cost which are due to busy or slack seasons. A tendency or trend will emerge which will indicate what the standard cwt. cost is.

Once this standard has been established, the shipping department expenses can be applied to any item being manufactured. If your studies have indicated that your shipping department expenses are 40c cwt., all that needs be done is to multiply the weight of a given item by 40c and add that to the manufacturing cost.

For example, assume that we are costing a new style of mattress. By our standard cost sheet, we find that the basic manufacturing costs are as follows:

Material	$15.69
Direct Labor	2.02
Manufacturing Expense	2.17
Cost of Goods Mfg.	$19.88

If the new mattress has a weight of 65 lbs., then we add the following:

Cost of Goods Mfd.	$19.98
Shipping Dept. Exp. 65 lbs. @ .40 cwt	.26
Cost of Goods Shipped	$20.14

What are the values of this method of accounting? There are many. The first one has already been mentioned. By separating your composite expenses into

(Continued on page 160)

it's NEW!
it's PNEUMATIC!
IT'S THE FIRST OF ITS KIND...

Combines two functions in one tool. Rapid and efficient tensioning and cutting.

Brainard's New Pneumatic Stretcher and Cutter for Heavy Duty Strapping . . . . .

. . . offers these *Advantages*

- ★ Only Pneumatic Heavy Duty Strapping tool of its kind.
- ★ Specially designed for heavy duty strapping on pallets, skids, car bracing, and large bundles.
- ★ Pneumatic power insures uniform tension on each band.
- ★ Pneumatic power does the work. Eliminates operator fatigue.
- ★ Rugged construction assures minimum down time for tool maintenance.
- ★ Tool is light weight and portable.
- ★ Because of less operator fatigue, tool is more productive during work shift.
- ★ Operates on any flat stock or flat package.

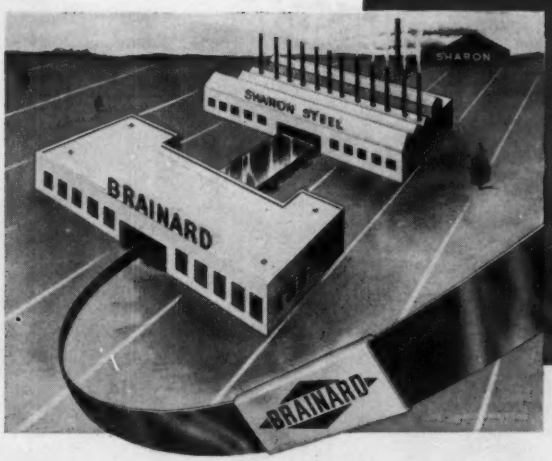
Brainard Steel Strapping

SHARONSTEEL

Brainard Steel Division, Sharon Steel Corporation
Griswold Street, Warren, Ohio

328

and THAT'S ONLY PART OF OUR STORY...



Brainard Integrated Production Insures a Constant *Supply* of Heavy Duty Strapping

As a division of Sharon Steel, Brainard can be sure that the steel used for strapping has been developed to meet their own exacting standards, and, more important, they can assure the customer of a constant supply of strapping in all heavy duty sizes and gauges: 2" x .050, 1¼" x .050, ¾" x .050, 1¼" x .035, ¾" x .035, ¾" x .028.

SPECIAL HEAVY DUTY STRAPPING SERVICE

Brainard has a team of specialists in the use of heavy duty strapping for steel mills, car-loading, palletizing, etc. Why not contact Brainard and ask about this service?

Brainard Steel Strapping
Griswold Street, Warren, Ohio

Please send more information about Brainard's complete strapping service.

NAME.....

COMPANY.....

CITY..... STATE.....

PHONE.....

Circle No. 148 on Reader Service Card for more information

ESSO STANDARD OIL AUTOMATES A GREASE DRUM LINE...
SPACE SAVING, SAFETY, ELIMINATION OF DAMAGE, AND HANDLING SPEED
ARE ALL BENEFITS OF FMC AUTOMATIC PALLET LOADING AT ESSO STANDARD OIL COMPANY'S PITTSBURGH, PENNA. GREASE PLANT

NEW FMC BARREL LOADER

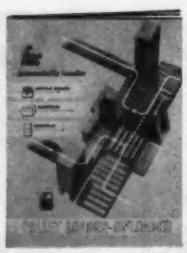
455 LB. DRUMS, 120 LB. KEGS AND 35 LB. PAILS ALL PALLETIZED BY ONE AUTOMATIC MACHINE

DISCARD YOUR OLD IDEAS about having to man-handle barrels, drums, kegs and pails. Automate for profits! Palletize your load automatically.

HOW? Your best bet is this modern barrel loader made by Food Machinery and Chemical Corporation. Engineers at the Pittsburgh, Penna., grease plant of the Esso Standard Oil Company, for example, handle 3 different sizes and weights of drums on their FMC barrel loader. They state these advantages: 1) assurance of lower production costs; 2) saves production floor space; 3) versatility in performance; 4) no damage to materials handled; 5) saving in manpower.

These and other savings can be yours, if you are handling more or less uniformly packaged products. FMC materials handling equipment is successfully and automatically handling cases of beer, soft drinks, and cereals and grains, as well as drums and barrels.

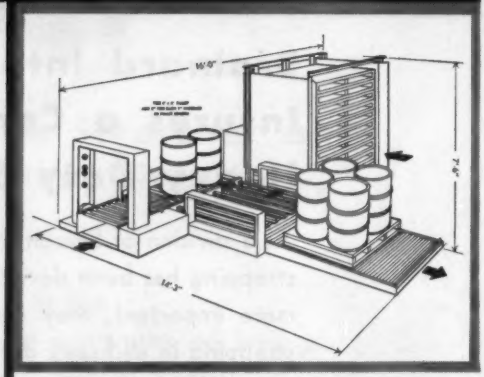
What's your materials handling problem? FMC can automate your production line around FMC automatic pallet loading and unloading machines. You'll get increased production, you'll give better customer service, you'll save manpower.



Write for NEW BULLETIN →

FOOD MACHINERY
AND CHEMICAL CORPORATION
Materials Handling Section
RIVERSIDE, CALIFORNIA

fmc



MORE FACTS ABOUT THIS NEW FMC BARREL LOADER (Model 389000 for Drums)

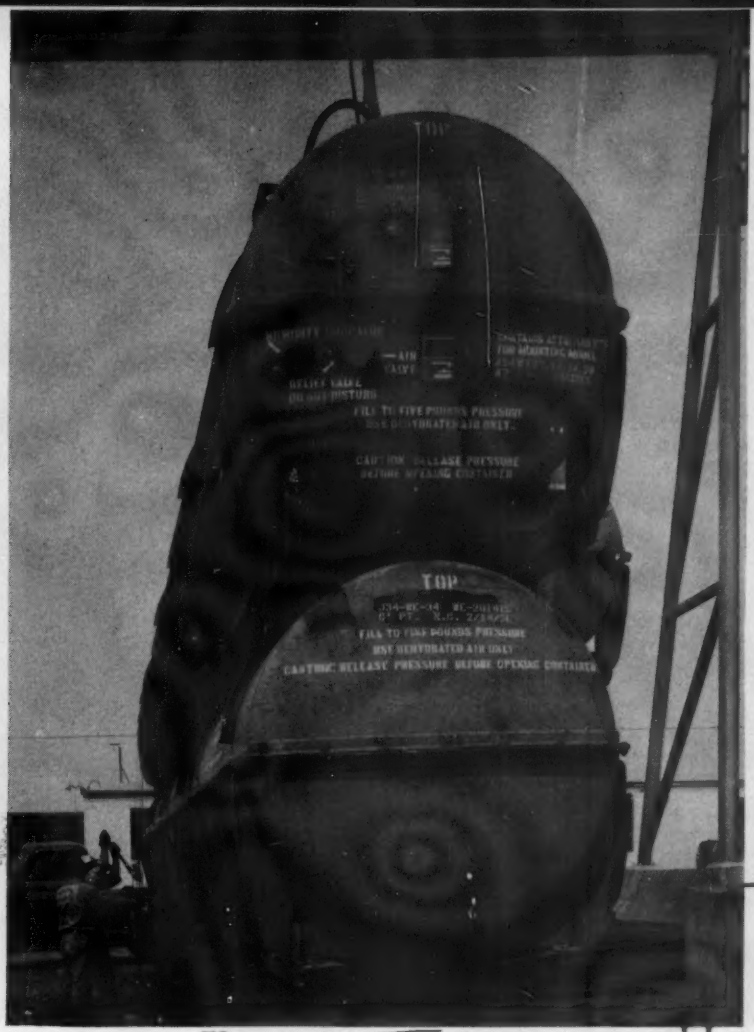
Hydraulic, electro-mechanical operation
Optional pallet patterns possible
Pallet dispenser, once filled, is automatic
Handles 48" x 48" pallets; conventional or 4-way
Pallet load: 3000 pounds max.
Capacities: 30 gal. and 55 gal. drums loaded at 6.2 per min. 4 to pallet
120 lb. kegs loaded at 10.8 per min. 9 to pallet
Safety-first design—Workhorse construction for continuous service
Eliminates man-handling materials
Write for information: Include pallet size and pattern styles

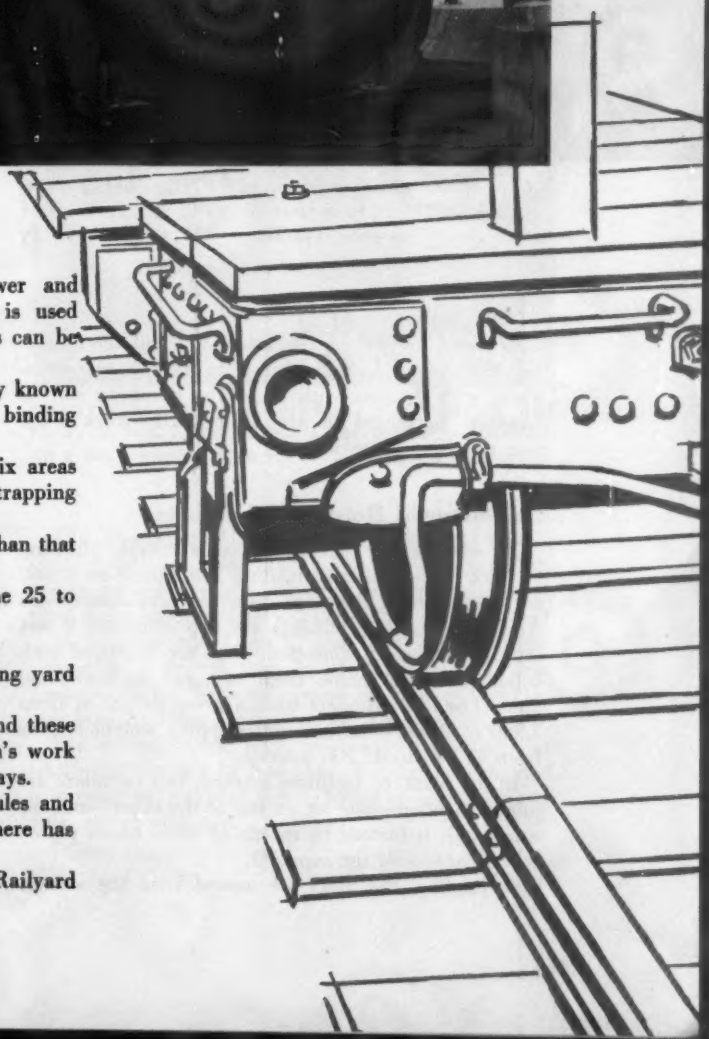
Circle No. 142 on Reader Service Card for more information

If you're shipping large units requiring maximum protection in transit, see how easily and effectively steel strapping will secure them—and, at the same time, produce substantial economies.

Steel Strapping Saves Six Ways

In securing heavy, bulky loads on rail cars . . .





LOAD SECURITY with lowered material, manpower and shipping costs can be achieved when steel strapping is used to tie large units to carriers. And the economical results can be substantial.

This has been shown by Belyea Truck Co., a nationally known Los Angeles firm which is handling the job of loading and binding jet engines for shipment from Lockheed Aircraft Corp.

As listed by a Belyea spokesman, there are at least six areas where substantial savings have been made with the steel strapping system, as follows:

1. Cost of strapping loads to cars is 50 per cent less than that for other means of securing used in the past.
2. Time for securing loads has been lowered by some 25 to 50 percent.
3. Manpower requirements have been cut 25 percent.
4. Time requirements for railcars to be in the shipping yard have been greatly reduced.
5. As a result, demurrage points have been gained, and these can be applied to save money in other phases of the firm's work where it may be necessary to hold a car more than two days.
6. The strapping job is assured of meeting loading rules and regulations of the Association of American Railroads—there has not yet been a need to recall a crew to re-do a job.

In addition, said Lonnie Stockstill, Superintendent of Railyard

LOWERING two-cylinder units by rail-mounted hoist. Loaded units, left, have been secured by three strips of steel strapping—one 1¼-inch, 1035 strap as "belly band" and two 2-inch straps as tie-downs. Regulations call for two straps but Belyea uses a third as an extra safety measure. A fully-loaded car holds 16 units.

Operations for Belyea, the faster application of binding material made possible by strapping tools—combined with the ease with which the strapping can be handled—permitted the firm to obtain the work in the face of stiff competition.

Rail-Mounted Hoist For Positioning

Jet engines are encased in special metal cylinders. A work unit consists of loading 16 of these on a flat-car and securing them for transit in accordance with AAR regulations. Cylinders are approximately 9 feet long, 40 inches in diameter. They are equipped with supports which enable them to stand as individual units. Loaded, cylinders have a gross weight of from 2,940 to 2,950 pounds. Total shipping weight is thus from 47,040 to 47,200 pounds.

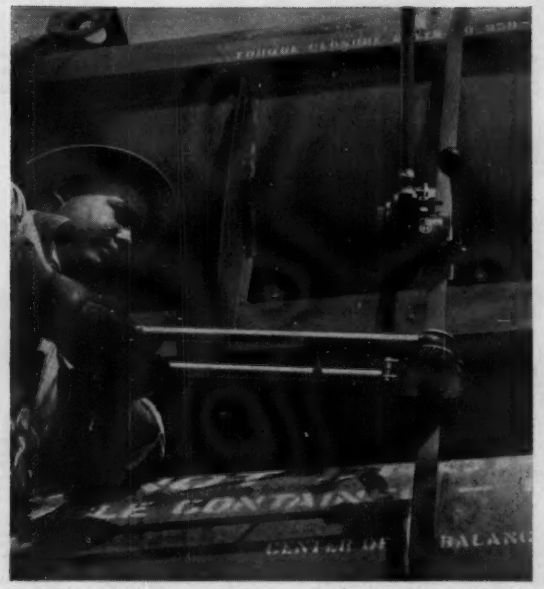
In the plant, to facilitate loading, two cylinders are joined together—one set on top of the other—and the single unit is formed by means of metal bands placed at the corners of the supports.

In loading, the units are moved from the storage yard to the car by means of an overhead, rail-mounted hoist. They are then placed on the car, on anti-skid plates, with length parallel to the length of the car. A second double unit is set beside the first, and the four cylinders are then "tied down".

Binding is achieved by one 50-foot length of 1¼ inch, .035 steel strapping placed around the center of the four cylinders (as a belly band) to make them into a unit package. This is then tied to the car by two 40-foot lengths of 2 inch, .050 strapping. One is placed a distance of one to two feet from each end of the group of cylinders.

A fully loaded car contains 16 cylinders set in two rows of eight units, with each row having two tiers of four units each. Railroad regulations for loads of this type call for two straps, but Belyea uses three per unit as an added safety measure.

"Savings in material costs, alone," says Stockstill, "dictates the use of steel strapping for this operation. For each load of 16 jet engines we save approximately $30.32 over what the material cost would be if we were to use another type of binding."



BINDING cylinders together at center, one operator tensions and seals strapping with minimum effort. Belyea's loading crew has been reduced 25 percent.

TYING-DOWN unit at ends. Note ratchet-type stretcher above seal. Without steel strapping, firm believes job would take some four hours more. Costs of preparing loads for shipment have been cut 50%.

FINISHING touch as car load is completed and ready to roll. Since no re-do has yet been required, on a load, waiting time for crew has been eliminated.

STRAPPING SAVES . . .

Continued

Through the efficiency provided by stretching and sealing tools, he believes, the firm cut the loading crew 25 percent and continued to do the same amount of work in the same amount of time. Before these mechanical devices were employed, it took a four man crew to get the job done in four hours. Now, with one man operating the stretcher, it is possible to do the work with a three man crew.

In the general work that Belyea does—as well as that for Lockheed—90 percent of the cars loaded are tied down in less than one day. It is seldom that the firm uses the two "free days" given by the railroad. This is important in that, by releasing the car back to the railroad, demurrage points are gained. A point, toward eventual detention of cars, is given for each day under the two free days. In other words, when a car is loaded in one day, the carrier credits a point for the second day. Since demurrage costs Belyea $3.00 per day for the third and fourth day, and $10 per day from the fifth day on, these points are worth real money when a car must be kept for a longer period.

The Belyea Rail Car Loading & Unloading Service division handles more than a hundred cars a month. Loads consist of such materials as structural steel, pipe, tanks, and machinery. Some is loose, some crated.

In handling pipe (2 to 12 inch diameter), standard procedure is to use four lengths of steel strapping. Two lengths are wrapped around the pipe to form the unit load, and two are used to tie it to the car.

For crated items, such as heavy machinery for which the box is a 10 foot cube, the standard method is to place two parallel, 2-inch bands around the entire unit, one at each end.

Photos courtesy Gerrard Steel Strapping Division, U. S. Steel Corp.

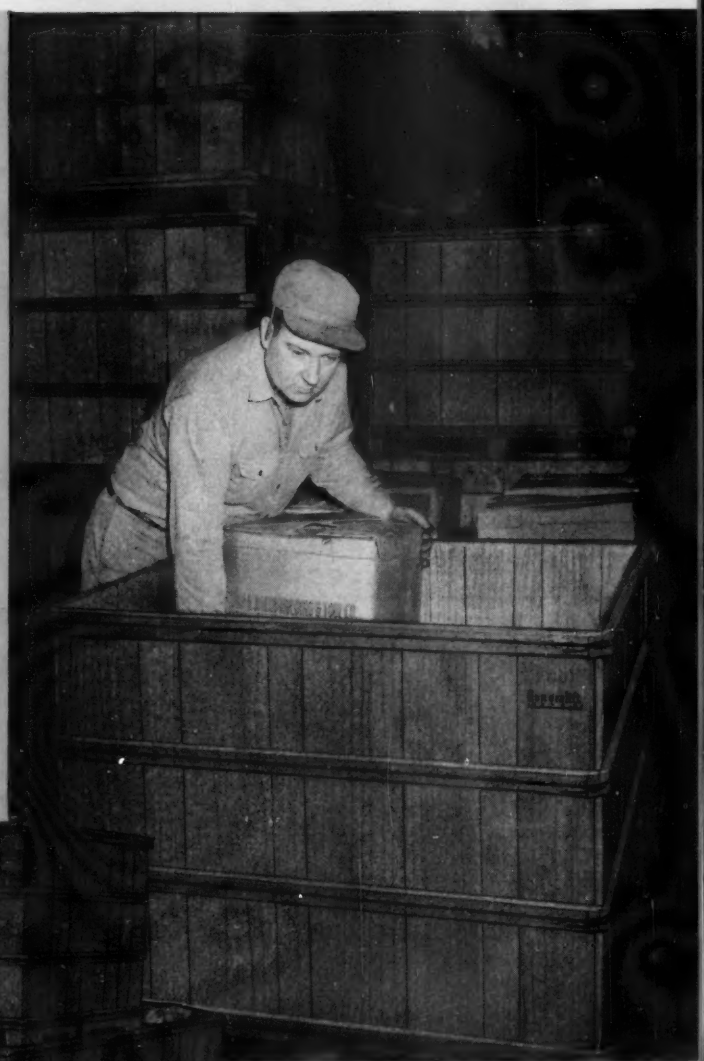
Generalift® RE-USABLE PALLET BOXES

Slash Interplant Handling Costs
Boost Warehousing Efficiency

Lower handling costs, ability to handle all sizes of parts, faster truck loading and unloading, substantial labor savings and less product damage . . . these are the advantages Bulldog Electric Products Company gained when they switched to Generalift Pallet Box handling.

Bulldog Electric, a division of I-T-E Circuit Breaker Company of Philadelphia, Pa., must move a wide range of parts from their plant in Bellfontaine, Ohio to the main plant in Detroit, Michigan. Use of Generalift Standard Re-Usable Pallet Boxes eliminates the need for costly single-use shipping containers for parts that range from tiny fasteners to bulky metal switch boxes. In addition to more efficient handling in warehouses and during shipment, company officials find that Generalift boxes eliminate spillage and keep parts cleaner.

While it was originally planned that the boxes would be returned to the Bellfontaine plant flat, most are reloaded with return shipments. Generalift pallet boxes have now made twenty or more round trips and are still good for many more.



▲ *All sizes of packages and parts are shipped in the Generalift Pallet Boxes. Loaded boxes are stacked three high when stored in warehouse as shown in background.*

◀ *Loaded Generalift Pallet Boxes are easily handled by lift trucks in the warehouse or for truck loading. The trays of parts at right are about to be packed in another pallet box.*

In the truck, pallet boxes are stacked two high. Use of pallet boxes provides faster loading and unloading.

THERE'S A *Standard* GENERALIFT PALLET BOX FOR EVERY NEED...

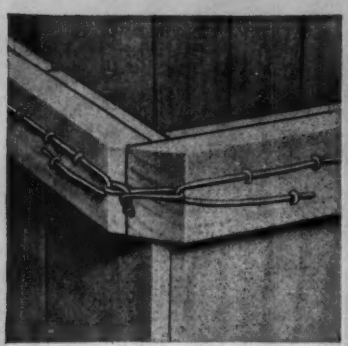
Generalift Pallet Boxes can bring important material handling economies to your plant, too. Re-usable types for loads of 2000 to 3000 pounds are of resawn hardwoods with outside cleats. Also available as open-front bin type (with or without gate). All are equipped with Generaloop closures and four way entry skids. Find out exactly what Generalift Pallet Boxes can do for you. Let us send a man—he can also tell you about our expendable one-trip pallet boxes that can handle loads up to 1500 pounds. There is no obligation.

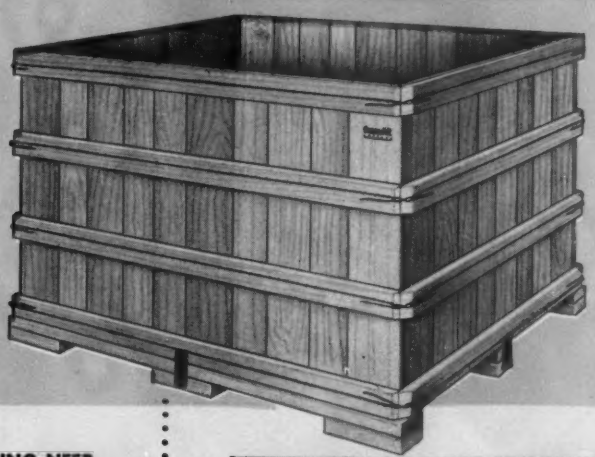
STANDARD INDUSTRIAL RE-USABLE PALLET BOXES			
Catalog No. Regular	Catalog No. Open-Front Bin-Type*	Outside Dimensions	Inside Dimensions
IR-L-24	IB-L-24	48 x 40 x 29⅞	45½ x 37½ x 24
IR-L-30	IB-L-30	48 x 40 x 35⅞	45½ x 37½ x 30
IR-S-24	IB-S-24	41 x 35 x 29⅞	38½ x 32½ x 24
IR-S-30	IB-S-30	41 x 35 x 35⅞	38½ x 32½ x 30

Note: Nesting of stacked boxes reduces listed outside height by ⅞"
*Gates available on order.

Exclusive GENERALOOPS

Exclusive Generaloop closures speed assembly and disassembly of pallet boxes and provide the strongest closure available in a re-usable pallet box—double wire strength and double mitered cleats at each corner. The wire closure is quickly twisted tight with a simple "Rosie Twister." The replaceable Generaloops are easily clipped to disassemble pallet boxes





ENGINEERED CONTAINERS FOR EVERY SHIPPING NEED

• Wirebound Crates and Boxes • Generalift Pallet Boxes • Stitched Panel Crates • All-Bound Boxes • Corrugated Containers

Factories: Cincinnati; Denville, N. J.; East St. Louis; Detroit; Kansas City; Louisville; Milwaukee; Sheboygan; Winchendon, Mass.; General Box Co. of Mississippi, Meridian, Miss.; Continental Box Co., Inc., Houston.

General Box

1847 Miner Street, Des Plaines, Ill.

521

PACKAGING AND SHIPPING IDEA of the month

Small Parts Individually Sealed

PACKAGING of small O-rings was a costly problem for the Ford Motor Co.'s Aircraft Engine Division in Chicago. Parts were hand sealed, but this method was costly and time consuming. Since the parts have to be packaged to Air Force specifications, they must be printed with part and contract number, which made it difficult.

Ford eliminated this problem by installing a system that automatically seals the small parts in individual envelopes. Used in the Spare Parts and Packaging Department, Assembly and Test, the system has reduced packaging costs of O-rings by 60 percent.

The new system seals up to 6000 parts per hour, ranging in size from one-quarter inch to three inches.

Parts feed from a hopper down a vibratory chute onto a moving strip of heat-sealable paper. An upper strip of sealing material, printed with the necessary Air Force data and other pertinent information, joins the lower strip at the sealing rolls. Here the pouch is heat-sealed on four sides and cut. The machine prints, seals, packages and cuts off automatically, and also rejects empty packages.

The individual envelopes, in addition to cutting packaging costs 60 percent, protect the parts against spoilage from grease, moisture or corrosion, according to Ford officials.

Capacity $100,000 per hour . . .

At a hundred dollars for each carton of nickels, and a thousand straps an hour, the arithmetic's fun. Think what you could do with bales of $100 bills! Maybe it's enough to think what you could do with a thousand straps per hour. Touch a button, and in three seconds the strap is around the carton, sealed, and cut off from the dispenser. Could be any carton . . . or a bundle of hardwood flooring or steel fence posts. True, the machine might take four seconds for a big carton, or six for a whopper. But with machines like this and Signode to help you make the most of them, wouldn't your product cost less to handle, store, ship and receive? To find out, call the Signode man near you, or write:

SIGNODE STEEL STRAPPING CO.

2618 N. Western Avenue, Chicago 47, Illinois

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide
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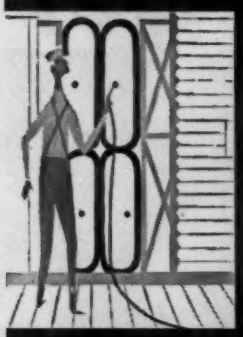
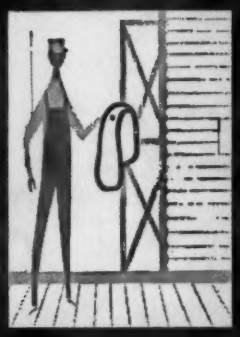
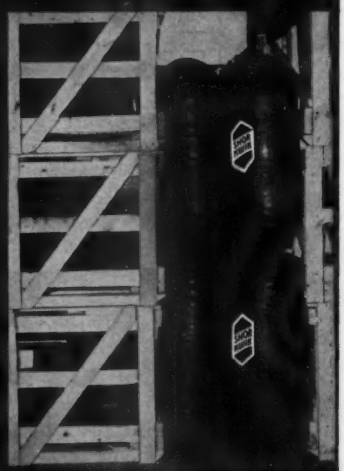


THIS KIND OF INFLATION CUTS COSTS, ENDS IN-TRANSIT PRODUCT DAMAGE!





Now, with U. S. Rubber's revolutionary new inflatable dunnage bags, you can eliminate the heavy losses from in-transit product damage. By simply placing U. S. SHOR-KWIK* bags in position and filling them with air, you effectively hold your lading securely in place. The resiliency of these air-filled bags permits the lading to adjust to starts and stops—without damage. Replacing costly, time-consuming wooden braces and steel straps, U.S. SHOR-KWIK dunnage cuts shoring time by at least 50%. Extra-tough neoprene-coated bags allow years of use and reuse. So to save money, time and your cargo, send for this booklet about U.S. SHOR-KWIK. Write: United States Rubber, P. O. Box 1453, Providence, Rhode Island.

*Patent Applied For

United States Rubber

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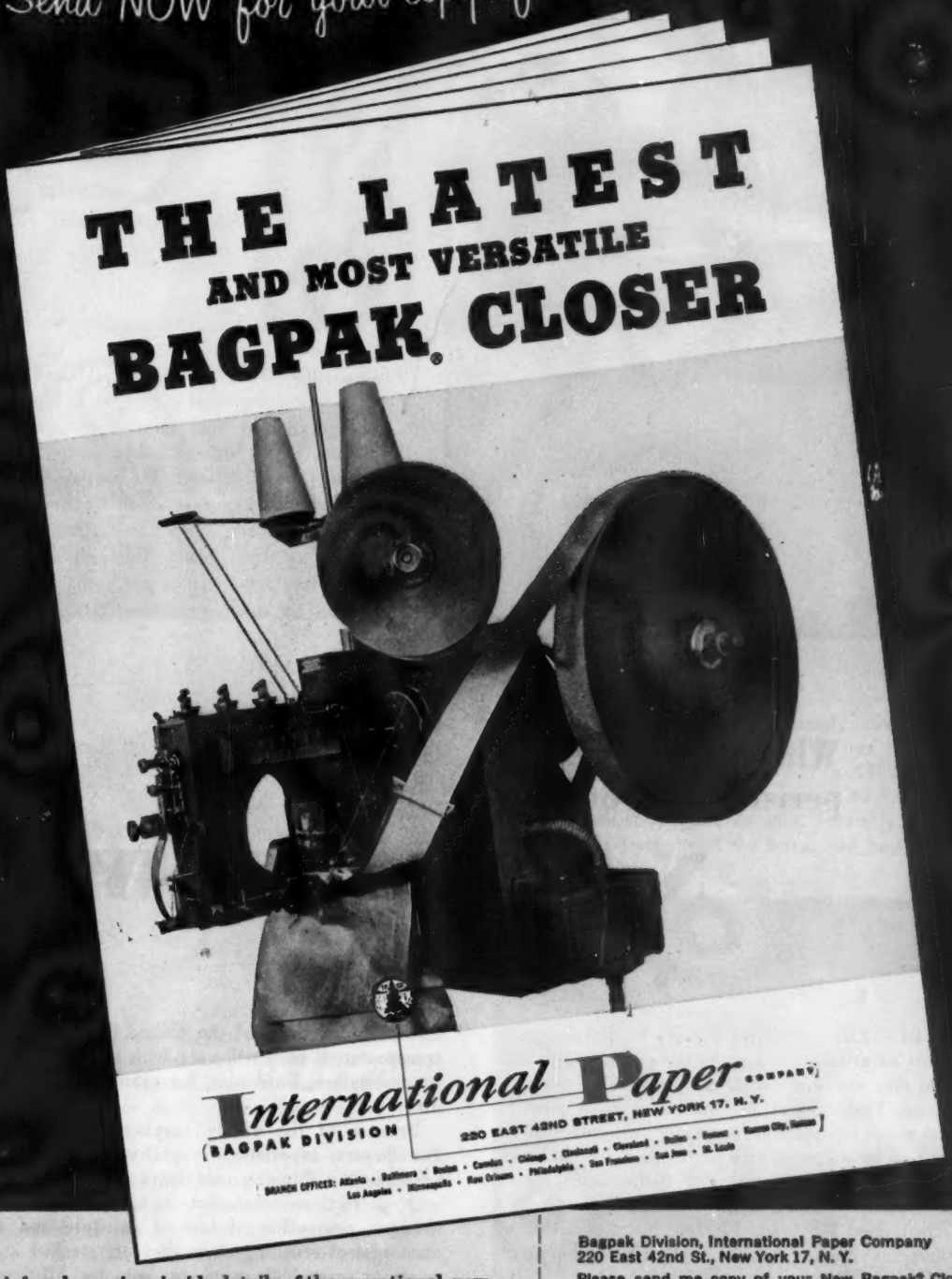
Send NOW for your copy of this NEW Book!



This brochure gives inside details of the sensational, new bag closing machines just introduced by the BAGPAK DIVISION of International Paper. (Orders coming in from all over the U.S.!)

Write for your copy today—or send in this coupon.)

Bagpak Division, International Paper Company
220 East 42nd St., New York 17, N. Y.

Please send me copy of your New Bagpak® Closer Brochure. I understand there is no obligation involved.

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FL-7

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ELECTRIC-POWERED ARM STITCHER (left) makes box bottoms at a rate of as high as 120 per hour during busy seasons at Consolidated Wholesale Florists, Inc. The pattern of the staples (above) affords the necessary strength to withstand six or seven-high stacking in transportation vehicles. This same stitcher is used to make up box covers. Thirty-six stitches are used in the bottom (nine per corner) and eight are used in each box-cover (two per corner.)

When you ship perishables you need . . .

No Wait - No Waste

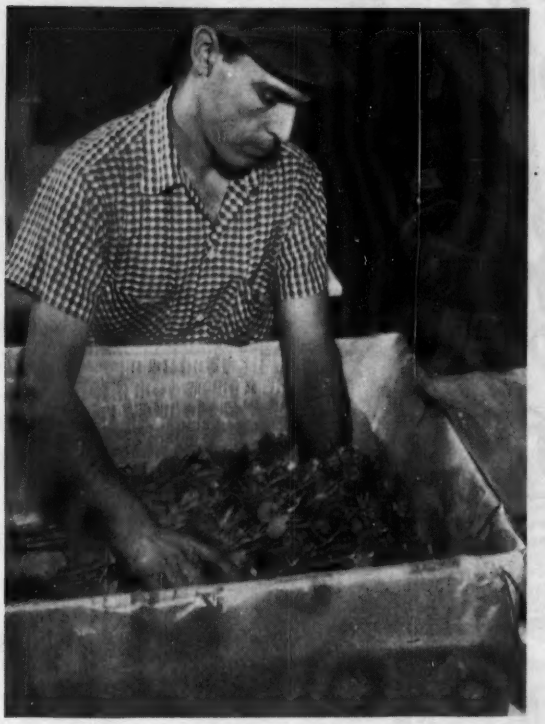
PERISHABLE products, flowers for instance, cannot sit around for long in the packaging department if they are to arrive at the market in top-quality condition. Furthermore, the packaging costs must be kept at a low enough level to permit sales price of the product to meet competitive prices. But, neither speed nor economy will be of any value if they are achieved at the expense of in-transit protection for the product.

Consolidated Wholesale Florists, Inc. has developed a packaging method which meets all of the above requirements for handling of perishable products. Through a sound approach to container design and selection of interior packaging and closure method, the firm has been able to achieve high speed packaging at low cost and yet insure adequate in-transit protection.

Located on Wall Street "the flower center of the country", in Los Angeles, Consolidated Florists ships flowers to all parts of the United States. Method of transportation used will vary with type of flower and its destination. Gardenias, for example, always go by air.

Because of the widely varying conditions which the flowers experience in different types of conveyances the shipping containers must provide three-way protection—insulation against temperature changes, prevention of loss of moisture and resistance against crushing when they are stacked as high as six or seven high in moving vehicles. All three are provided by a surprisingly simple, inexpensive package.

Containers, made of 200-pound test corrugated board, range from 12″ x 10″ x 6″ to 20½″ x 11″ x 48″ in size. They are made up, as fast as 120 per hour during peak seasons, by a single operator, using an electric-powered arm stitcher. A secret of the



NEWSPAPERS are used as inner liners for the boxes. They do an adequate job of keeping flowers fresh by holding moisture in the box and by insulating the perishible flowers against changes in outside temperatures. A stapling plier is used by the packer to affix newspapers to the sides of the boxes. Flowers shown here may be destined for a marketing area in almost any part of the country. Consolidated's method has proven extremely effective against spoilage.

CORRUGATED COVER fits snugly over flanged edges of the shipping box. Sizes of box range from 12" x 10" x 6" to 20½" x 11" x 48". They are made of 200-pound test corrugated board and are stitched with copper-coated wire. Formerly, both the tops and the bottoms of the boxes had been riveted.

Packaging

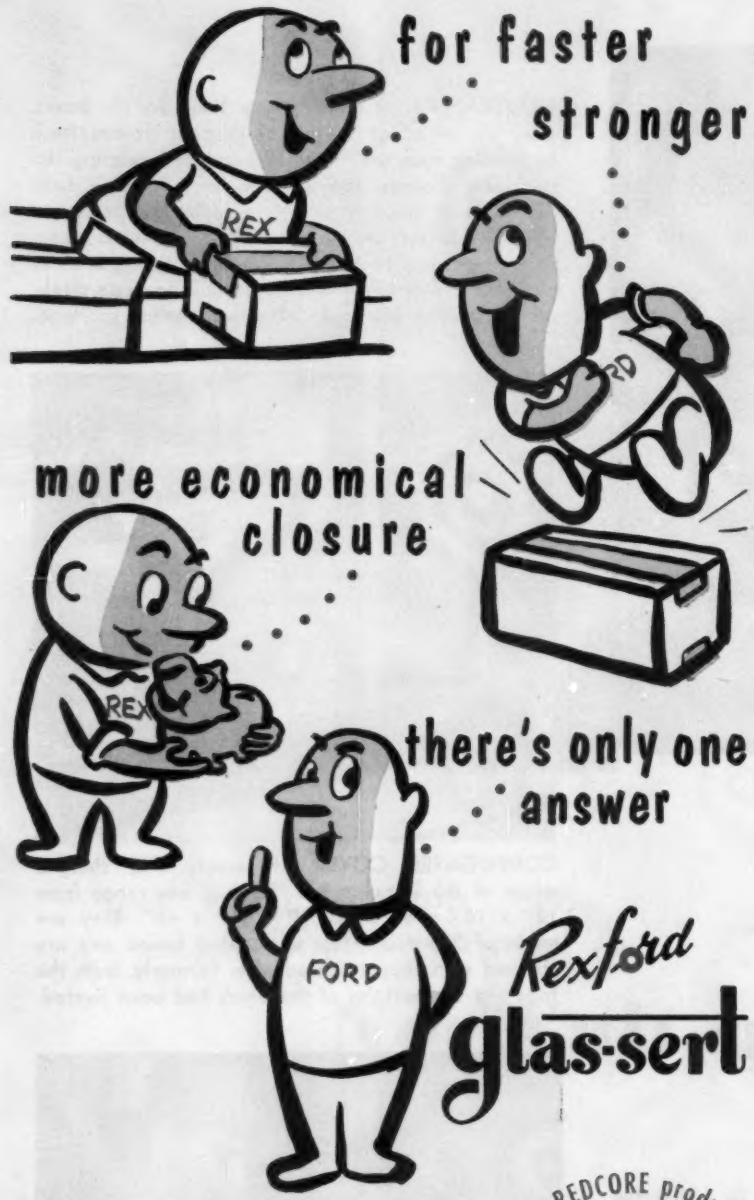
strength of the boxes is the pattern in which the stitches are spotted. The stitcher puts 36 stitches in the bottoms—nine in each corner—and eight in the box covers—two at each corner. Stitches are made of 1030-20 copper-coated wire.

When a box bottom and top have been completed, the bottom is lined with newspapers. They do a most adequate job of keeping flowers fresh by holding the moisture in the box and by insulating against outside temperatures. A stapling plier is used to staple newspapers to the sides of the boxes.

After the flowers have been put into a box, the lid is put on. It fits securely over flanged edges on the box bottom. A stapling plier with a pointed blade is then used to staple the top edges to the bottom flanges. The result is a secure, well sealed, package which will carry flowers safely to any retailer in the country.

STAPLING PLIER with a pointed blade fastens cover to box. The blade penetrates the box, providing an anvil for the stapling action. It is quick and easy and fits well with the Consolidated's entire high-speed flower packaging and shipping operations.

Photos Courtesy Bostitch, Inc.



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FOR ADDED STRENGTH AND PROTECTION

- GLAS-SERT is reinforced in both directions with Rayon and Fibre-glass strands.
- Because 2 strips will do the job, Rexford's GLAS-SERT is especially suitable for high speed automatic taping machines and saves you two-thirds the time when your carton is sealed by hand.

So, whatever closing method you employ . . . hand sealing or automatic taping machines . . . seal all your cartons with Rexford's GLAS-SERT.

- Protective packaging with Polyethylene keeps GLAS-SERT "factory-fresh" . . . always ready to use . . . to the last roll in the box!

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4-IN-1 PRODUCTION . . .

(*Continued from page* 61)

dant has, at his finger tips, push-button electric switches to stop the line if unhooking doesn't go smoothly.

The system currently employes only overhead conveyor Line 3 for final assembly, but it is set up to duplicate final asembly, and packaging, operations on Line 2 to meet production requirements.

Later utilization of overhead conveyor Line 2 for final assembly at point "Y" will be achieved through the use of diversion gates on the roller conveyor line. Pallets for assignment to Line 2 final assembly are already fitted with removable "guide sticks", which engage with a guide strip at the turn leading to this line's final assembly bench. Pallets not having guide sticks proceed to Line 3 for final assembly.

Four Lines For The Price Of One

Says R. R. Gunter, AiResearch Industrial Division chief accountant, who has been close to the assembly project since its inception:

"Although our system's initial operation is substantially that of a single assembly line, the layout is so planned that it can be converted with minimum modification into a four-line flow. We felt that we would be in business for a long haul, and that successive additions to a single, conventional production line would prove excessively costly—costly as a result of rising prices of materials and because of operational down-time required to integrate new lines with the first one. We feel that we have acquired four lines for the price of one in our lay-out."

How this will be achieved follows.

Three final assembly benches now in operation at point "A" of Line 3 will be duplicated at points "X", "Y", and "Z". The latter will be located inside the loop of the No. 2 overhead conveyor and directly opposite benches now used for preliminary assembly and load-

NOW! USS Gerrard AUTOMATIC STRAPPING MACHINE

Fully Tested, Tried and Proven

FOR ADDITIONAL INFORMATION and a copy of our folder on this Model 12 Automatic Strapping Machine, fill in the convenient coupon.

Where automation is important to your packaging and bundling problems, the USS Gerrard Model 12 Automatic Round Steel Strapping Machine is the answer to your needs. This machine has thoroughly proved its efficiency and trouble-free operation. Here, briefly, are some of its many advantages:

LOW COST—This is one of the lowest-cost automatic strapping machines on the market today.

COMPACT—Requires only 11½ sq. ft. of floor space. Table height, 31". Weight (approx.), 1500 lbs.

SPEED—Up to 24 ties per minute.

TWO SIZES—Either machine will handle packages as small as 8" wide by 2" high. The larger will handle packages as large as 26" wide by 20" high.

EASY TO OPERATE—Utilizes USS Gerrard Round Steel Strapping from 14 through 18 gauge. Easy to thread and operate.

LOW MAINTENANCE—One-shot, built-in lubrication system and compact, rugged, simple construction mean minimum service and maintenance.

TENSION—Can be predetermined, and when set is uniformly maintained on all packages regardless of size or weight.

SINGLE POWER SOURCE—All functions are mechanically controlled and interlocked. Simply plug in and run.

PACKAGES which vary in size and shape can be strapped without adjustment to machine.

COMPRESSION DEVICE for pre-compressing packages or bundles can be supplied as optional equipment.

QUIET OPERATION—Fully engineered to eliminate noise and vibration.

For more complete details, contact your USS Gerrard sales representative. Also mail coupon for folder and the Gerrard Blue Book of Packaging. This contains full information on all USS Gerrard Machines and round and flat strapping.

GERRARD STEEL STRAPPING DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: CHICAGO, ILLINOIS

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Round and Flat

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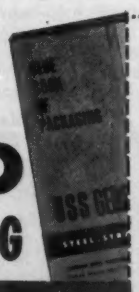

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United States Steel Corporation
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Please send me folder on the Automatic Strapping Machine and the 36-page GERRARD Blue Book of Packaging. No obligation.

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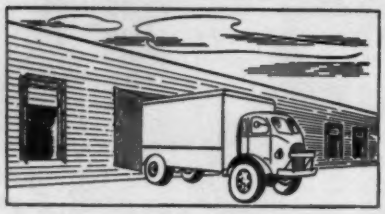
Protect Your Loaders



• Nothing is as effective as a Dazzo retractable dock door shelter, because when extended for loading reduces drafts and heat loss in the plant while dock doors are open for loading providing comfort to production workers and personnel, cuts fuel bills, effectively protects loaders from driving rain, wind, dust, sleet or snow, eliminates loaders discomfort slow-down and absenteeism due to weather exposure, reduce the hazard of wet and slippery docks, which are the cause of serious accidents. Protects the goods from rain, wet and soggy cartons cause complaints, claims and loss of valuable customers.

• Dazzo patented dock shelters are well engineered, they are now being used in thousands of plants effecting annual economies in hundreds of dollars and costing only a few nickels per day.

• These scissor armed retractable dock door shelters are permanently anchored on the building wall around the door. When extended the framework and fabric effectively enclose the space between the dock door and rear top and sides of truck or to top and sides of RR box car door.

Write for Literature

DAZZO PRODUCTS
152 BLEECKER STREET
NEW YORK 12, N. Y.

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4-IN-1 PRODUCTION

(Continued)

ing of roller conveyor pallets headed for final assembly areas.

Closely-spaced hooks of the No. 2 and No. 3 overhead conveyor lines will be kept well-stocked with assembled housings. These will be removed at final assembly benches for installation of rotating cartridges, final inspection, and then replaced on available empty hooks of the overhead line. Before each final assembly bench, the roller conveyor line is to be cut and a small segment of the line attached to a lever-actuated hydraulic hoist. This will enable the mechanical lift of a fully assembled unit to engage a passing hook.

Both overhead conveyor lines 2 and 3, rotating clockwise, will serve four functions in optimum operations. (1) They will provide the overhead storage of shells. (2) They will deliver the shells to twelve final assembly benches at points A, X, Y, and Z. (3) They will receive the completed units, ready for shipping. And (4) they will deliver the completed units into shipping cartons at the two packaging points (one for each overhead line).

If optimum production functions smoothly, overhead conveyor lines 2 and 3 will display a uniform distribution of hooks holding housings "in storage", riding the circuit until they are needed by final assemblers.

Minimizes Effects of Production Slow Down

Should production slow down or fail at any one of the twelve final assembly benches, the only effects would be (1) decreases in the flow rates of completed units reaching the packaging points, and (2) the slowing of demand for preliminary assembly housings when floating storage reaches a point of saturation. At the packaging points, workers will let unfinished "storage" housings ride past. They will be ready, with open cartons, to receive inspection-tagged, completed units, which they will unhook as the conveyor lowers them.

Typical of the modern trend

CASE No. 709

A leading manufacturer discovered that tags and labels for shipping and identifying crates and finished goods, became illegible after continuous exposure to the elements in the company yard or during transit. Others "tore off" during lift truck operations. Valuable time was lost in re-assorting and re-labeling. SOLUTION: SPEEDRY LABS developed an 'all-weather' ink. Waterproof. Indelible. Smudgeproof. Non-fading. Ideal for marking unpackaged wood, metal, or plastic products.

For your "problem" marking, stenciling, stamping, use a Speedry Special Ink or marking device. Speedry formulates new inks, re-works old formulae. Let our labs help you. Send "Material Sample" of your problem to Speedry Labs.

WRITE!
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"makers of the famous Magic Marker"
Richmond Hill 18, New York

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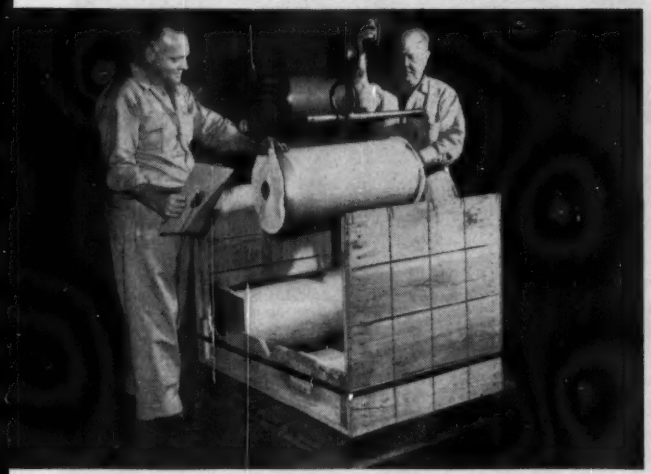
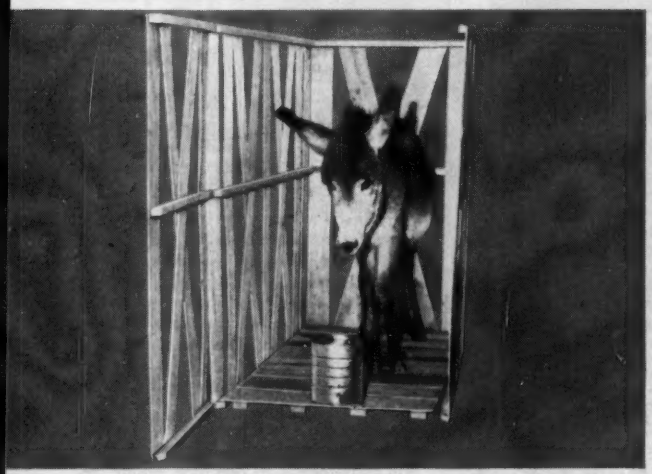
PACKING NEWS FROM WIREBOUND

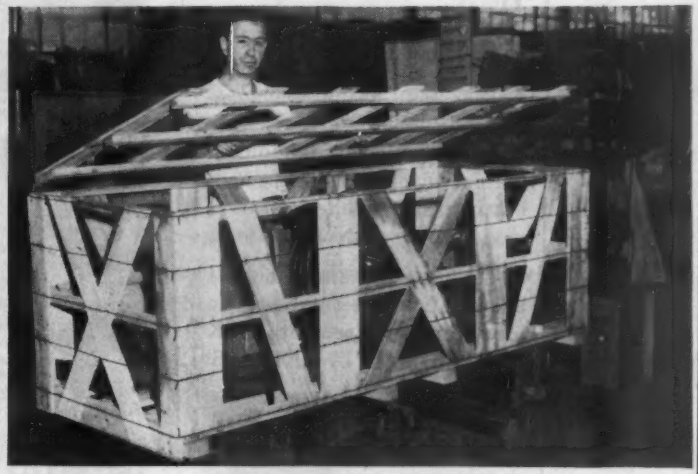


Size Rolls of Aluminum Foil Get Royal Protection. Bumps and jars in estic or export shipment of foil are absorbed by rugged Wirebounds. que construction available in Wirebounds gently cradles fragile and easily tched spools of aluminum foil so that they are not touched by the box or r spools . . . they literally ride on air to their destination!

V-8 Service Crankcase Assembly is "Wrapped Up" in Wirebound. Now packing time is cut to 4 man-minutes. Pre-fabricated hexagonal shape eliminates interior braces or cushioning for a fast wrap. Savings in freight and warehousing are achieved because this shape permits interlocking four containers on a pallet instead of two—a steady base for high-stacking.



rros Are "Packaged" for Shipment. Versatile Wirebounds protect every d of item. When burros are shipped loose, they eat their own and each ers"traveling papers" tied around their necks. The problem was solved by cking burros in Wirebounds with tags and waybills glued to the outside. stomers are happier, too—express rates are drastically lower, live delivery guaranteed when burros are packaged in Wirebound containers.



Multi-Unit Excavating Equipment Gets Money-Saving Wrap. Converting to Wirebounds saves about $10,000 yearly and wraps up extra economies from reduced tare weight for shipment of complex power digging attachments. Two pre-fabricated Wirebounds—one for the basic unit, another for special adapter parts—eliminate container set-up time, cut packing man-time in half, reduce tare weight 40%, and save over-all packing costs by 30%.

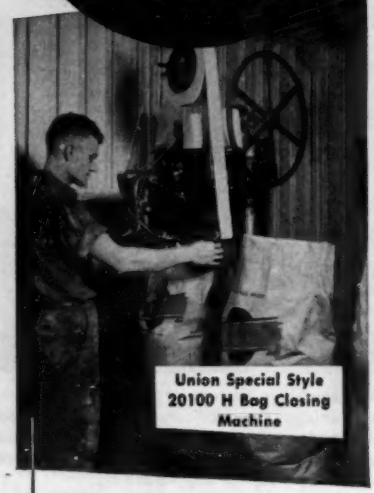
FREE important advantages like these can be yours . . . write today for your copy of this informative booklet "What to Expect From Wirebounds". It is loaded with problem solving Wirebound applications. Better yet, talk over your requirements with a Wirebound Sales Engineer. Write us for either the book or the man.

Wirebound
BOXES & CRATES

WIREBOUND BOX MANUFACTURERS ASSOCIATION
Room 1171, 327 S. La Salle St., Chicago 4, Ill.

THERE'S ALWAYS SOMETHING NEW IN WIREBOUNDS

here's how to close...
MULTIWALL PAPER BAGS



Union Special Style 20100 H Bag Closing Machine

FOR lower production costs . . . stronger, neater closures . . . ability to get out rush orders in a hurry, you can't beat Union Special Bag Closing Machines! Specially built to stand up under heavy production schedules, these machines provide the high output rates needed to meet modern competitive conditions.

In the Union Special line, it's easy to find the right unit to meet your requirements. ASK FOR RECOMMENDATIONS.

SEND FOR THIS BULLETIN!

It's easy to find just the right unit to meet your individual needs in Union Special's big line of bag closing machines. Ask for a copy of Bulletin No. 200, "UNION SPECIAL FILLED BAG CLOSING MACHINES."

Union Special®
MACHINE COMPANY

415 N. FRANKLIN ST., CHICAGO 10, ILL.

Circle No. 127 on Reader Service Card

4-IN-1 PRODUCTION

(*Continued*)

toward mobile storage, the floor space in the assembly area remains uncluttered. There are no stack-ups of components which may have been completed in advance of assembly requirements. There are no requirements for "floats" of components.

Efficiency Plus

That no more than six final assembly operators are needed on the line for today's output of 700 turbochargers per month reflects the efficiency of the line.

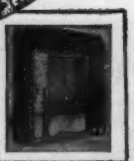
Of the 150 now employed at the plant, only 65 people are required in shop and assembly production, and 10 in administrative capacities. The remaining 75 men are on the Industrial Division's engineering staff, which is expected to remain fairly constant as production increases.

From this it will be seen that AiResearch anticipates the ability to advance present production rate

CAPCO DOCK COVERS
GIVE
YEAR 'ROUND PROTECTION

CAPCO Dock Covers completely enclose the space between car and building doorways protecting loading and unloading during bad weather preventing accidents insuring against loss of heat or refrigeration. 51 different models in any size for every loading problem

Write for literature and name of nearest distributor.



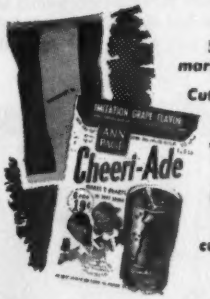
CAPCO

622-24 PROSPECT AVENUE • KANSAS CITY 24, MISSOURI

Circle 30 on Reader Service Card

FOR IMPRINTING
Flexible Wraps and Films
INDUSTRIAL'S
Rainbow Coder
Sets the Standard!

Attached to either continuous or intermittent types of packaging, wrapping or overwrapping machines — HAYSSEN, BATTLE CREEK, STOKES, TRANSWRAP, OLIVER, GLOBE, BARTELT, WRAP-AID, etc. — the RAINBOW Coder automatically imprints clearly, sharply and *permanently* at packaging point *all* combinations of colors, letters and numbers for marking, dating or coding your products.



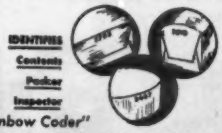
Streamline marking operations
Cut handling costs
Increase volume handled
Reduce inventory costs
Speed up customer service

Everywhere packagers of fresh and frozen foods, baked goods, candies, hosiery, underwear — anything packed in polyethylene, cellophane, waxed paper, glassine, foil, tissue or any material that takes a hot roll leaf impression—know that the RAINBOW Transleaf Coder sets a demanding standard of comparison hard to beat because the RAINBOW Coder contributes so efficiently to profits.

The economical, rugged RAINBOW saves package pre-printing, inventory and storage costs—needs no operator, no ink, no makeready— and next to no maintenance.

Before you buy any marking equipment, take a good look at the RAINBOW CODER —you'll have a standard for comparison! For complete information, write today.

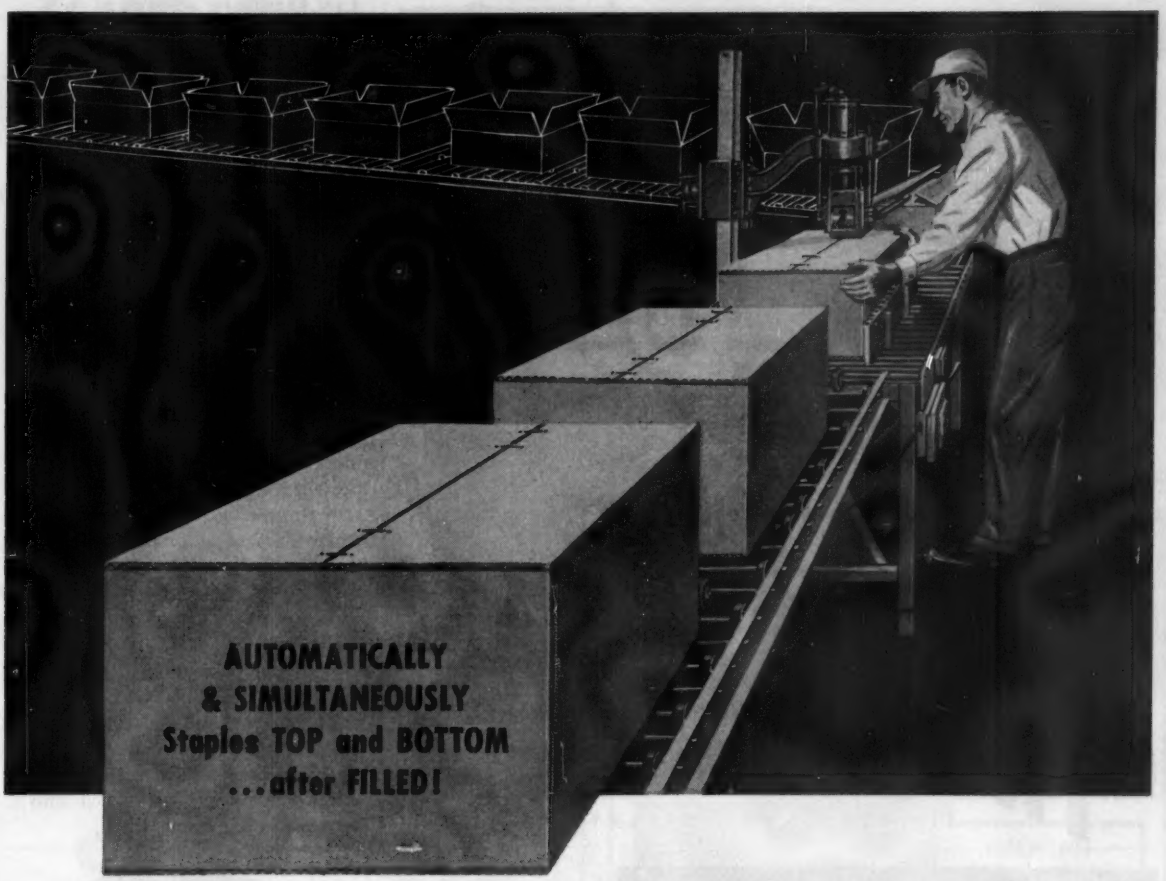
Dept. F.



"Rainbow Coder" is a trademark for Industrial's marking equipment.

ime INDUSTRIAL MARKING EQUIPMENT company, inc.
454 BALTIC STREET
BROOKLYN 17, N.Y.
MAin 4-2601

Circle 141 on Reader Service Card



an open and closed "case" by International

Merchandise is waiting . . . The call goes out for more cartons! No time for glue to dry! No space for bulky "set-ups"!

No problem, either—because an International DUAL STAPLER is on the packaging line.

Flat cartons are pulled from stock, opened, filled with merchandise—and sent to the waiting DUAL.

Click! Click! Simultaneously and automatically, both the top and the bottom flaps of the carton are securely stapled *from the outside!*

The goods inside are perfectly safe. China or steel, the contents are protected by the DUAL's easily adjusted penetration control. It allows full, "blind", or anything-in-between clinching.

Just one man on the line handles up to a *thousand cartons* an hour just like this one—with automatic ease!

Is this a description of *your* packaging department? If not, it can be! Let your International Representative show you HOW.

INTERNATIONAL Gold Crown
ISM
STEEL STAPLES SEAL SECURELY

International Staplers

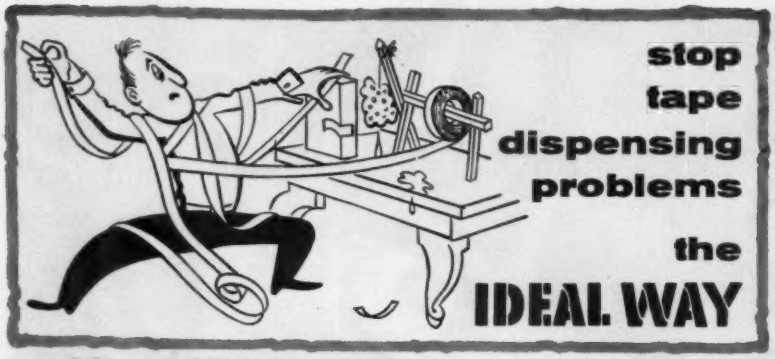
INTERNATIONAL STAPLE & MACHINE COMPANY

ORIGINATORS OF CARTON CLOSING STAPLERS

800 E. HERRIN STREET HERRIN, ILLINOIS

Circle No. 72 on Reader Service Card for more information

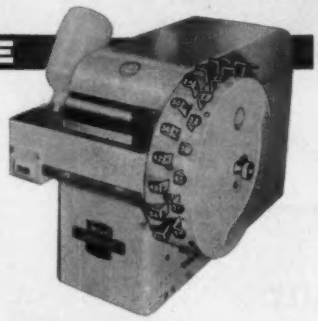
Circle No. 69 on Reader Service Card for more information



stop tape dispensing problems the IDEAL WAY

with an IDEAL 200E Electric CLIP-A-TAPE

Are old-fashioned "guess and mess" taping methods gumming up the works in your plant? Then get the gummed tape length you want (accurately measured and cut from 3" to 105") when you want it (instant-acting selecta-matic keyboard) without waste . . . complete moistening with thermostatically controlled heated water . . . just the right amount of water to give proper moistening for proper sealing. Will cleanly cut all gummed tapes, even reinforced or cloth tapes up to 4" wide.



FREE Illustrated Brochure

IDEAL STENCIL MACHINE CO.

104 IOWA AVE., BELLEVILLE, ILL.

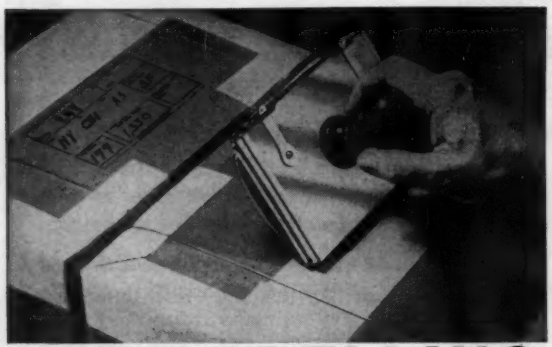
4-IN-1 PRODUCTION

Continued

to 4000 units per month by the addition of only 150 persons to the existing production staff.

Mechanization of production equipment has had a considerable effect upon the plant output. Division manager Williamson estimates that, without the numerous devices used to handle material in and around machines, the plant's production force would have to be increased by 25 workers to meet present schedules. He says that he now refuses to buy shop machines which are not automatic and that the firm has on order attachments for its older, non-automatic equipment to make them more automatic.

AiResearch believes that gains achieved with this system have more than justified the risks it took in designing it, that the gamble which more conservative minds might have seen has turned into an excellent investment.



LOT LABELLING

Eliminate Shipping Labels! Print Direct!

Quick! Accurate! Easy! Print shipping information direct on cartons, boxes, packages. Eliminate double operation of preparing labels and then pasting them to the containers. Get 1,000 or more clear, sharp impressions from one stencil without re-inking. New FORM-CUT® Stencil has facsimile of your label or shipping form die-impressed into the stencil. Then type or write in address or identification data . . . attach to duplicator . . . and print, like using a rubber stamp. Write for Literature and FREE SAMPLE FORM-CUT STENCIL AND PRINT.

THE ORIGINAL HAND STAMP STENCIL DUPLICATOR

IT PRINTS ANYWHERE

OVER 35 YEARS

Also for addressing shipping tags and labels . . . prints, postcards, menus, forms, bulletins. 8 complete outfits: $9.50 to $99.50, including supplies (f. o. b. factory). At office or shipping room supply dealers.

MULTISTAMP STENCIL DUPLICATOR ®

MANUFACTURED ONLY BY THE MULTISTAMP CO. NORFOLK, VIRGINIA

Circle No. 91 on Reader Service Card for more information

THE Most Dynamic WORKING SURFACE EVER ENGINEERED

The RACK HYDRAULIC UTILITY TABLE

Combination of variable working height and reinforced top provides multiple use with dies, at presses, shears and other industrial applications.

FLEXIBILITY GUARANTEED

Only $200.00

F.O.B. Connellsville, Pa.

HUNDREDS OF APPLICATIONS

SPECIFICATIONS

- 1000 lbs. capacity
- Table top .....20"x 26"
- Base .....20"x 26"
- Lowered Height.....29½"
- Elevated Height .....45"
- Elevation.....15½"
- Equipped with 4 ....4" Steel Casters 2 Rigid and 2 Swivel

Write for bulletin today—Model 11044—Made in U.S.A.

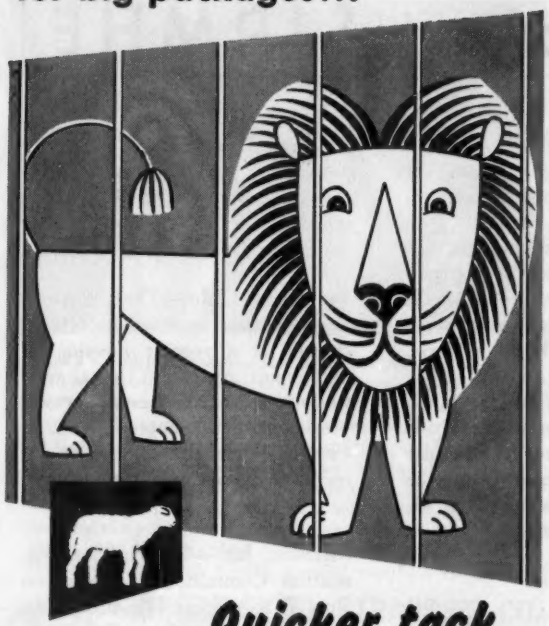
RACK HYDRAULIC EQUIPMENT CORPORATION

131 SIXTH ST., CONNELLSVILLE, PA.

Plants: Connellsville, Pa. • Gardena, Calif. • Farnham, Canada • Slough, England

Circle 98 on Reader Service Card for more information

Longer tack
for big packages...



...Quicker tack
for little ones

GREEN CORE®
superstandard gummed sealing tape

Whether you ship big, lion-size packages or little lamb-size cartons, you'll do a better sealing job, faster, with Green Core.

This tape reaches tack sooner and holds tack longer than any tape you've ever seen. That's because it carries an exclusive gumming, developed in Mid-States' own laboratory. It's water soluble, requiring no special additives, yet it reaches tack almost at the instant it touches the moistener and stays tacky long enough to tape the biggest carton without drying out. It sticks instantly and permanently with a minimum of rubbing.

If you haven't yet tried Green Core, you don't know the best of all sealing tapes. Write for a free sample roll and prove Green Core's superiority right in your own shipping room.

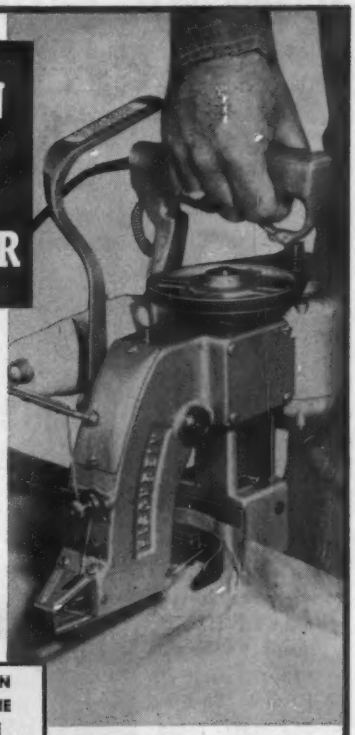
MID-STATES Gummed Paper Company

Dept. 718, 6850 SO. HARLEM AVE., BEDFORD PARK, ILL., ARGO POST OFFICE

New York · Syracuse · Philadelphia · Boston · Atlanta
Cleveland · Detroit · St. Louis · Los Angeles

Circle 88 on Reader Service Card for more information

FISCHBEIN *Portable* BAG CLOSER



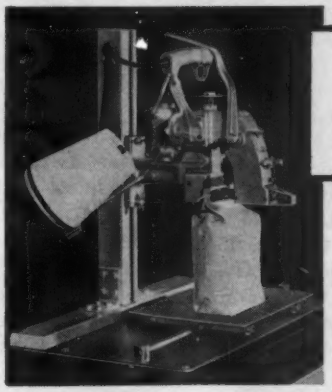
HANDLES ALL TYPES OF BAGS!

- Total weight. 10½ lbs.
- Requires no installation . . . plug into any outlet
- Simple to operate and maintain
- Lowest priced bag closer on market

FULLY GUARANTEED!

OPTIONAL SUSPENSION UNIT ADAPTS MACHINE TO STATIONARY USE

NEW! FOR CLOSING SMALL BAGS!



FISCHBEIN TABLE MODEL CARRIAGE CONVEYOR
(Model FS)

One simple knob locks any Fischbein Portable Bag Closer into proper sewing position. Carriage slides freely and returns automatically to starting position, ready for next bag.

UNIQUE VERSATILITY! Any Fischbein Bag Closer can be used 3 different ways!

1. Completely portable
2. Suspended with counterbalance
3. On carriage conveyor for closing small bags

FOR DETAILS, MAIL THIS COUPON TODAY!

DAVE FISCHBEIN CO., DEPT. 4B
2730 30th Ave. S., Minneapolis 6, Minn., U.S.A.

Name_____

Firm Name_____

Address_____

City_____ Zone____ State_____

Circle 57 on Reader Service Card for more information

News About SIPMHE

Our "Raison d' Entre"

By John W. McReynolds
President, SIPMHE

THERE is something I would like to mention in this second note to FLOW and to SIPMHE members. It concerns the reason for SIPMHE's existence, and our relation with this magazine.

We must not interpret this page to mean—in any sense—that FLOW has become our official publication. Nor does it mean that SIPMHE is giving FLOW any special inside "pipeline" into our affairs. It *does* mean that we, as a society, respect FLOW and its independence of thought. In the years we have known FLOW, its editors have never taken advantage of any intimate knowledge of our business in order to capitalize on their information. To our minds, their treatment of SIPMHE news has been fair, impartial, ethical. And we are grateful to them for this opportunity to present a special news service to the publication's vast national audience.

Perhaps it is well that I mention here the primary reason for SIPMHE's being—our *raison d'etre*, so to speak. It is to provide a truly national professional engineering society for the professional packaging and material handling practitioner. As an organization, SIPMHE is interested in the individual—in helping him become a better practitioner—a better packaging and material handling engineer. And in so doing, to better serve his employer and the general public, commerce and industry at large.

Our divisions, or chapters, are set up as instruments of that policy. The chapter organization is actually an extension of the national society at the local level. The national organization is closely related to it and, in many ways, dependent on it. For it is the chapter that in reality provides the services that help make the member more valuable within his field, within his company.

LOS ANGELES, CALIF.—Monthly seminars at different locations are being conducted by the Southern California Division of SIPMHE, to discuss lessons of the Purdue University Industrial Packaging Short Course. Meeting places have been established to accommodate all interested people in the area. The group stresses that there are no restrictions whatsoever on attendance; anyone interested in industrial packaging is urged to come.

CHICAGO, ILL.—A panel discussion composed of 5 packaging authorities was the highlight of a recent meeting of the Illinois Division here. The speakers were: **George Wishner,** Towmotor Corp.; **R. D. Jones,** Automatic Transportation Co.; **"Bud" Miller,** Kraft Foods Co.; **Louis Dupoy,** Lamson Corp.; and **Irving Footlik,** I. M. Footlik & Assoc., Material Handling Consultants.

PHILADELPHIA, PA.— New officers were elected at a recent meeting of the Philadelphia Regional Division. Heading the group for 1957-58 are: **William H. Scott,** president; **John W. Davidson,** exec. vice president; **Howard C. Kunkel** and **Louis P. Wahl,** vice presidents; **A. O. Manger,** treasurer; and **Lawrence M. Eagan,** secretary.

ST. LOUIS, MO.—The Missouri Division was presented its official charter at a regular meeting of the group recently. The charter was presented to **Elmer A. Kruse,** president of the chapter, by **C. J. Carney.** Carney is managing director of the national organization.

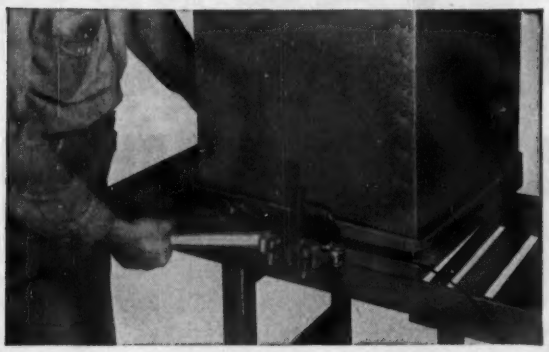
CHICAGO, ILL.—The National Education Committee met here on June 7, to discuss educational activities of the society. This committee is headed by **John W. Kraus,** chairman. Other members are: **E. B. Candell, W. A. Lynam, K. V. Moulton, N. A. Parker, N. W. Rickhoff, H. C. Rountree, W. L. Utley and J. D. Velardo.**

BALTIMORE, MD.—New officers for 1957-58 have been announced by the Maryland Division. President of the group is **W. K. Boettinger.** Others elected are: **E. Lazarus,** exec. vice president; **R. E. Brasshaw,** vice president; **W. Yockel,** secretary; and **D. W. Mercer,** treasurer.

MINNEAPOLIS, MINN.—The first in a series of panel discussions was conducted by the Minnesota division of SIPMHE at a meeting held recently. The panel dealt with the development of specifications for purchasing packaging supplies. The panel consisted of **Ed Hoyle,** Minneapolis Honeywell Regulator Co., **Oscar Baerenwald,** Toni Company, and **Everett Burkholder,** Minnesota Mining & Manufacturing Co. After a 15 minute address by each panel member, the meeting was opened to discussion by all members present.

Circle 113 on Reader Service Card for more information

Signode one-hand strapping tool is easier, faster to use



Here's a complete, semi-automatic tool you can operate with *one hand!* It tensions, seals and scores the strapping in one continuous operation. Weighing only 6½ pounds, it is the only one-piece, one-hand strapping tool made. Its light weight makes it easy to apply strapping on the side of a package or on narrow surfaces such as crates and small containers. An operator using this tool can carry on the strapping operation with one hand while draping the strap on the container with the other. For ½", ⅝" and ¾" strapping. Ask for literature on *Signode's SFC Strapping Tool.* Circle inquiry number, or write

SIGNODE STEEL STRAPPING CO.

2618 N. Western Avenue, Chicago 47, Illinois
Offices coast to coast.
Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

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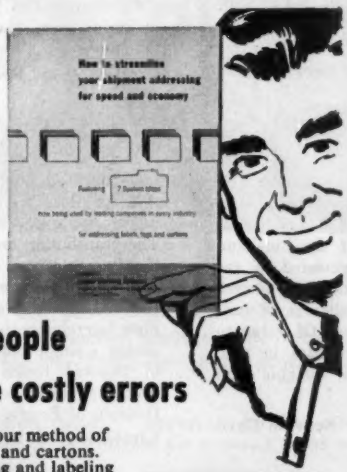
You can speed up your shipments with fewer people and eliminate costly errors



HOW? By improving your method of addressing labels, tags and cartons. Old-fashioned stenciling and labeling methods can seriously delay shipments as well as waste precious time and labor.

FIRST STEP—Send today for your free copy of this new comprehensive booklet that describes the latest systems for addressing labels, tags and cartons.

Your free copy is waiting
Send for it today!

NEW BOOKLET TELLS:

- How to evaluate efficiency of shipment addressing operation
- Modern systems for addressing labels and tags
- The latest direct-to-carton stenciling systems
- Integrated shipment addressing, the newest trend in order-processing

Weber

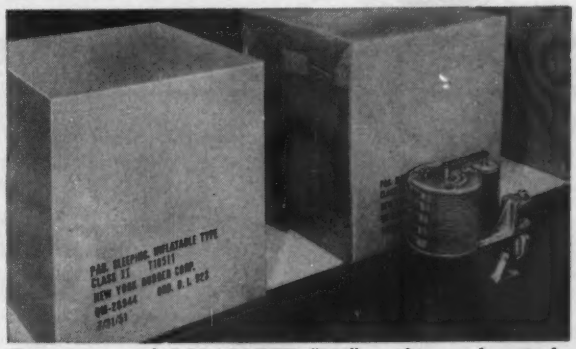
WEBER MARKING SYSTEMS
Div. of Weber Addressing Machine Co., Inc.
Dept. 1-G
Mount Prospect, Illinois

SALES AND SERVICE IN ALL PRINCIPAL CITIES

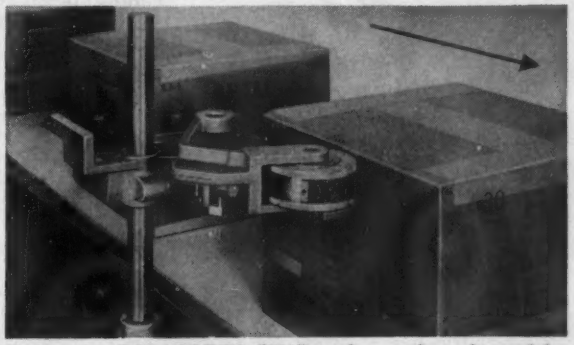
Circle 132 on Reader Service Card for more information

Low-cost marking attachments save thousands of $ every year

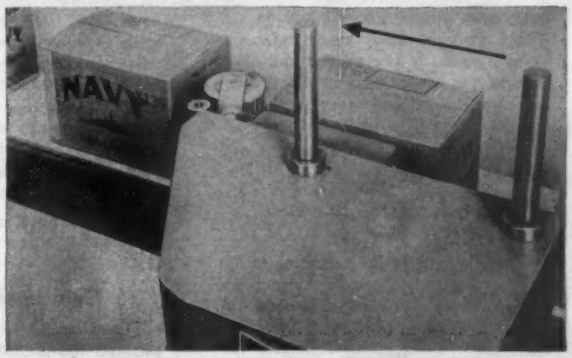
Compact ROLACODER machines mark 1, 2 or 4 sides of cartons, cases, drums, bags, etc. automatically



Friction-operated ROLACODER "100" machine makes single, accurate "spot" imprint of brand names, varieties, code-dates, lot numbers on one side of containers as they travel on conveyors or through case-sealer. Prints from 1 to 5 lines of copy up to 12" long from easily interchangeable rubber type.



Twin-action ROLACODER "500" marker marks codes and lot numbers on *front* and *one side panel* of cases simultaneously . . . in a single pass. Friction-operated . . . imprints legends containing up to 8 letters and figures.



Solenoid-activated twin-action ROLACODER "200" machine imprints codes and lot numbers on *rear* and one side panel (or rear only). When mounted in tandem with ROLACODER "500" machine, cases can be marked on all 4 sides simultaneously without requiring that they be turned.

Write for new Bulletin "ROL-2"

Gottscho **ADOLPH GOTTSCHO, INC.**
Dept. D, Hillside 5, N. J.

Automatic CODING, MARKING, IMPRINTING MACHINES

In Canada: RICHARDSON AGENCIES, LTD., Toronto & Montreal

Circle 62 on Reader Service Card for more information

WHAT'S NEW IN USEFUL LITERATURE

A bibliography of New and Current Manufacturers' Publications available upon request. Indicate choice (s) on self-mailing Reader Service Card on pages 35 and 36.

Monorail Electrification Won't Shock:

To provide complete information about its new polyvinyl chloride shielded electrification for overhead handling systems, the American MonoRail Co. has published bulletin KS-1. The eight-page booklet shows numerous advantages of Kant-Shock Shielding as applied to American MonoRail Track and crane systems.

Circle 171 on Reader Service Card

One Clamp Suits Any Rack:

The Tube-Strut universal clamp can be used with ordinary pipe or tubing to build every type of storage rack, according to information in a folder published by the Tube-Strut Division of Tubular Structures Corp. of America. Many of the ways in which the clamps may be applied are illustrated.

Circle 172 on Reader Service Card

Caster Buying Guide:

The Hamilton Caster & Mfg. Co. will send you a 56-page catalog which presents its expanded line of industrial casters and wheels. It was designed to serve as a ready reference buyer's guide. It is classified and cross indexed for convenience in quickly determining caster and wheel types and sizes for specific applications.

Circle 173 on Reader Service Card

Aluminum Pipeline Couplers:

Now you can pump pressures up to 1000 PSI in portable aluminum pipelines according to the John Bean Division of Food Machinery & Chemical Corp. Recent literature illustrates the simplicity of design of the FMC fast move coupler and the quick positive lock which it provides.

Circle 174 on Reader Service Card

Push-Button Freight Car Positioning:

The Jones Machinery Division of Hewitt-Robins, Inc. has published a 32-page booklet on car pullers. The booklet contains a description of several installations and describes various types of push-button controlled car pullers for moving freight cars, barges, scrap buggies, furnace cars and many types of industrial transfer cars.

Circle 175 on Reader Service Card

Complete Specifications for Entire Industrial Truck Line:

The complete line of fork-lift trucks, straddle carriers, powered hand trucks and towing tractors produced by the Industrial Truck Division of Clark Equipment Company is described in a catalog just published by the company. Specifications given for each model include capacity, turning radius, width, length, fork length, lift heights and service weight. Every machine is illustrated.

Circle 176 on Reader Service Card

Super Silos:

"Super-Concrete Stave" storage bins for industry are described in a four-page bulletin from Neff & Fry Co. It explains construction of the bins and tells how they are engineered to the purchasers' requirements. One intresting feature is the installation of concrete roofs when desired. Of value to users is a table of capacities in relation to bin diameters, heights and weights of materials.

Circle 177 on Reader Service Card

Tire Handbook:

The Monarch Rubber Co. has announced the availability of a complete catalog and handbook on its line of industrial solid tires. The catalog contains descriptions and illustrations of standard and special types of Monarch tires, data on comparative performance tests and other information. A separate 20-page booklet, contained in a pocket on the inside back cover of the bulletin lists current specifications for almost all makes of lift trucks.

Circle 178 on Reader Service Card

Strapping Stories:

Articles on the latest money-saving methods of baling waste paper, strapping paperboard containers and coils of strip steel are featured in the Spring, 1957 issue of "The Signode Seal". Copies of the publication, now in its 40th year, providing helpful information for advancement of good packaging, shipping and handling, are available from Signode Steel Strapping Co.

Circle 179 on Reader Service Card

Transport Via Air:

Bulletin T-V 553 of Young Machinery Co. describes the TransVair method of handling bulk materials. A typical TransVair system is illustrated and explained. Among the advantages claimed for Transvair are: low initial costs, low operating cots, low maintenance, high efficiency, cleanliness and flexibility.

Circle 180 on Reader Service Card

Unitized Two-Way Radio:

Bendix 25-54 mc. two-way radio features unitized plug-in chassis construction for flexibility, convenient maintenance and quick economical servicing. The transmitter and receiver strips in the base stations are, in all respects, identical to the corresponding strips in the mobile units, thus providing complete interchangeability simply by transposing a single plug. The complete line of two-way radios is described in a brochure available from Bendix Radio Division of Bendix Aviation Corp.

Circle 181 on Reader Service Card

Clamps, Clamps, Clamps:

Dozens of varieties of clamps and other material handling devices are illustrated and described in a 24-page booklet published by Merrill Brothers. Sheet clamps, drum lifters, tilters, drag clamps, chain slings, tong lifts and numerous items are included.

Circle 182 on Reader Service Card

Advantages of Fiber Glass Tote Pans:

According to a new brochure published by G. B. Lewis Co., tote pans

Circle 131 on Reader Service Card →

RCA SAVES 4 WAYS with WEBB Conveyors...

This Webb conveyor installation, processing RCA Colorama TV picture tubes, is a perfect example of what can be accomplished with modern conveying techniques. In addition to the obvious economies realized with mechanized materials movement, these five conveyors, totaling 2385 feet, have provided RCA with four important benefits:

1. **Save Production Time** . . . conveyors dip down at every work station to an efficient work level, bringing the material to the worker . . . minimizing manual handling.
2. **Paced Production Flow** . . . conveyors carry materials to each operation at a predetermined rate, aiding in control of production rate.
3. **Overhead Live Storage** . . . stock-piling on floors eliminated, providing greater productive area and increasing production potential of the plant.
4. **Greater Employee Safety** . . . cleaner, uncluttered work areas because materials travel and are stored overhead.

Your plant can realize these same benefits, and others as well, with modern conveyorization techniques. For more information, or for engineering service, write or call Webb today.

More Details on Reverse Side

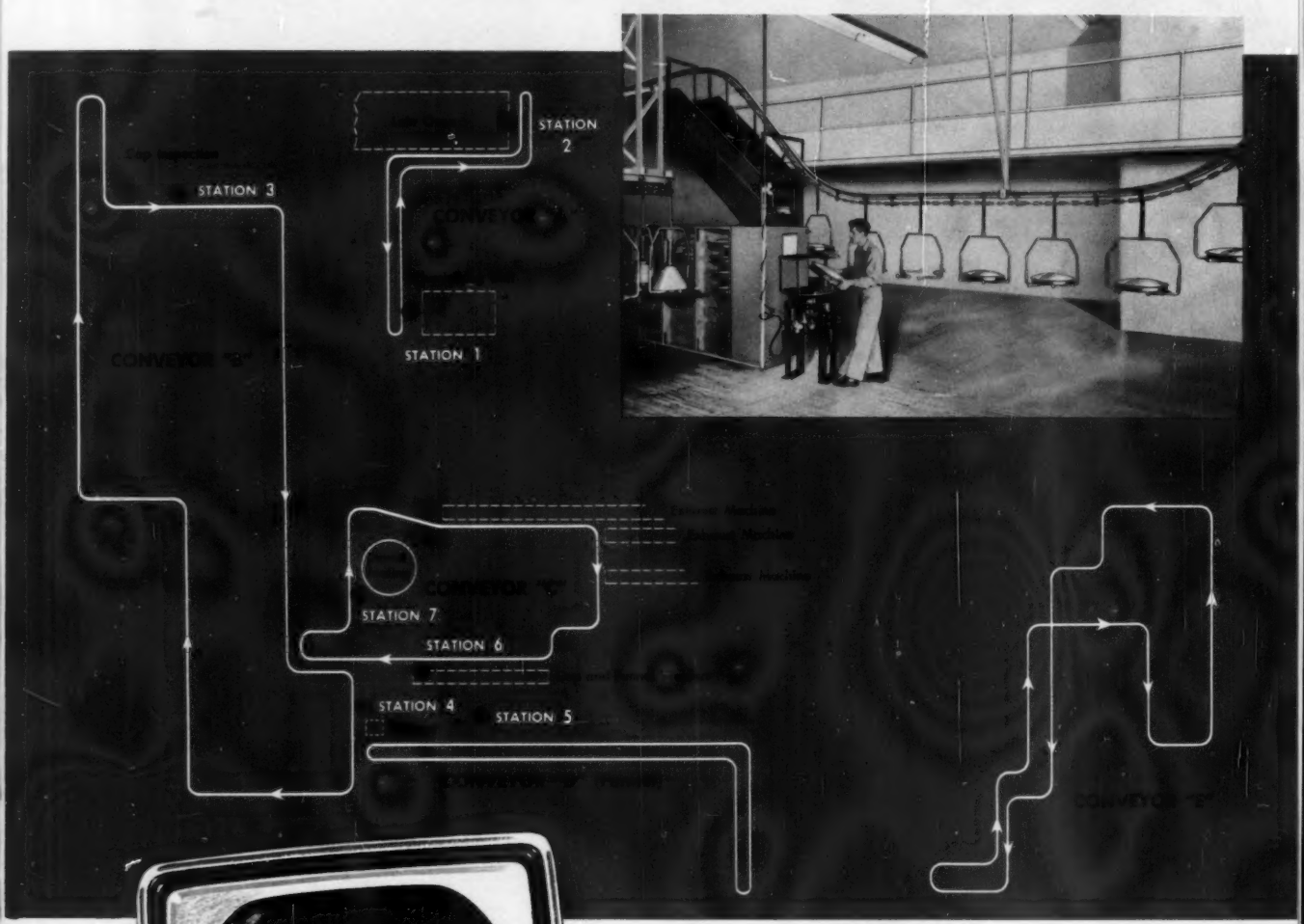
JERVIS B. WEBB COMPANY

SPECIALISTS IN CUSTOM CONVEYOR SYSTEMS

8935 ALPINE AVENUE • DETROIT 4, MICHIGAN

FACTORIES: DETROIT • LOS ANGELES • ATLANTA • HAMILTON, ONTARIO, CANADA • ENGLAND • FRANCE • BELGIUM • AUSTRALIA

Webb Conveyors at RCA . . .



At the start of the RCA Colorama TV picture tube processing and assembly operations, the cap assemblies are taken from the aluminizing unit and placed on Webb trolley conveyor "A" at station 1. This conveyor transports the caps automatically to station 2 where they are removed and placed in a Lehr bake-out oven. After traveling through the oven, caps are inspected and placed on conveyor "B" at station 3.

The caps are then automatically carried overhead to station 4 where they are placed on a vibrator (see photo above) before being welded to funnel assemblies at station 5. Funnel assemblies are processed along the route of conveyor "D". After welding, the assemblies are placed on conveyor "C" at station 6 and carried to the mount sealing machine at station 7. This machine automatically seals the electron gun in the bulb. Several assemblies at one time rotate merry-go-round fashion in the sealing machine fixture.

Tube assemblies are again placed on conveyor "C" and conveyed to the straight line exhaust machines. Following the exhaust operation, tubes are based, aged and tested. Any tubes that fail to meet the RCA quality standards are sent to salvage on conveyor "E". The salvage conveyor carries rejects through several reclaiming operations .

Throughout the RCA plant, conveyors dip down at each work station to make materials available at a convenient height and location. Between stations, conveyors automatically carry materials overhead . . . keeping aisles clear, assuring maximum productive floor area. Each of the five conveyors carry a recirculating inventory of parts, thus keeping parts storage overhead.

The Jervis B. Webb Company manufactures all types of conveyors . . . from simple straight line units to complex systems. Webb conveyors can be designed to carry all types of materials . . . from toothpicks to logs, from raw metal to 40,000 lb. tractors. Whatever your materials, a Webb conveyor can convey them . . . at lower production cost, with greater production efficiency and with more effective production control.

If your problem is modernizing production flow . . . call a Webb Engineer

JERVIS B. WEBB COMPANY
SPECIALISTS IN CUSTOM CONVEYOR SYSTEMS
DETROIT 4, MICHIGAN

molded of fiber glass reinforced polyester answer a great number of in-plant handling problems. The pans will not rust, rot, shatter or dent. They resist water, oil, and most chemicals, are nonconductors of electricity and withstand temperature extremes. They stack and nest in their own dimensions by means of a contour offset design. Many styles and sizes are described and illustrated in the free pamphlet.

Circle 183 on Reader Service Card

The Raymond Story:

A booklet published by The Raymond Corp. tells the story of "You and the Raymond Corp." It has been written in several sections with chapters addressed to customers, employees, sales representatives, investors, suppliers, neighbors and members of the material handling industry. It is being distributed in recognition of 35 years of association with the company by George G. Raymond, Sr.

Circle 184 on Reader Service Card

Fool-Proof Heat-Sealing:

The Sentinel "3-R" system of heat-sealing is based on the simultaneous application of the right heat, right pressure and right dwell time. Complete details are included in new literature from Packaging Industries, Inc.

Circle 185 on Reader Service Card

Easy-To-Use Strapper:

The use of aluminum in the construction of the Signode SFC strapping machine makes it extremely light and easy to handle. A two page bulletin available from Signode Steel Strapping Co. gives the details and illustrates its simplicity of operation.

Circle 186 on Reader Service Card

Compact Hopper Truck:

Condensed specifications are available on the R-15 Moto-Bug, a compact rider-type truck with a 15 cubic foot capacity hopper body. Overall length, including hopper body, is 93¼ inches. Overall width is 45½ inches.

Circle 187 on Reader Service Card

Bulk Handling of Cement:

Systems for the bulk handling of cement are discussed in a 4-page technical article released by Fuller Company. It describes how two highly flexible pneumatic conveying systems have enabled a cement company to take advantage of cheap water transport. A system using Airslide conveyors for loading hopper-bottom cars which transport the cement to a dock where it is discharged to a Fuller-Kinyon stationary pump and conveyed to the hold of a barge is explained. Also described is the unloading of the barge at distributing station by means of a Type D Fuller-Kinyon remote-control unloader which pumps the cement a distance of about 350 feet. Automatic truck loading at the distribution station is also discussed.

Circle 188 on Reader Service Card

Synchronized Conveyors at Work:

Installation Report No. 26 from Jervis B. Webb Co. tells about synchronized conveyors which automatically move automobile parts and bodies from station to station at Chrysler Corp. of Canada, Ltd. Every step along the way is described in detail to show how the system provides maximum efficiency in handling parts and complete bodies.

Circle 189 on Reader Service Card

Even Dock Curbing Is Portable Now:

Magserco portable dock curbing enables variations in loading locations along a dock without sacrificing safety. A data sheet available from Magnesium Service Co. shows the ease with which the light weight curb sections may be rearranged to suit any requirement.

Circle 190 on Reader Service Card

Describes Truck Maintenance School:

The field service school of the Industrial Truck Division of Clark Equipment Co. now has available an eight-page brochure describing the facilities, methods of teaching and course of study. The school schedules regular three-week courses in maintenance and repair of Clark's gas, electric and LP-Gas powered fork trucks, powered hand trucks and straddle carriers. Clark customers may enroll in the courses at no cost.

Circle 191 on Reader Service Card

Car Loading Instructions:

"How to load and unload cars with Evans DF Loader Equipment" was written by Evans Products Co. to show how easy it is to load and unload cars fitted with Evans DF Loader Equipment. Its 24 pages tell how to plan the load, how to install doorway members and bulkheads, how to load upper decks, how to brace heavy sections, how to load door space and how to store extra equipment. It has a great number of illustrations of typical loads accompanied with loading diagrams.

Circle 192 on Reader Service Card

How Bulk Packaging Saves:

Savings made possible by shipping chemicals in corrugated bulk containers are covered in a four-page brochure published by Gaylord Container Corp., Division of Crown Zellerbach Corp. Case histories illustrating various types of corrugated boxes which have been successfully used in the chemical industry are included.

Circle 193 on Reader Service Card

Tight Turning Truck:

The Hustler Pug is a 3000 pound capacity fork truck which claims an extremely short turning radius as one of its outstanding features. A brochure distributed by Hustler Corp. reports that the Pug will make money for the user by reducing non-productive aisle space and by increasing operator efficiency. Among other features highlighted in the literature are, a hydraulic "package", automatic electric forward and reverse controls, and airplane type hydraulic lift-lower and tilt controls.

Circle 194 on Reader Service Card

How to Use Rubberized Hair:

Methods of using rubberized hair in die-cut, laminated and molded forms are shown in literature published by and principles of package design are discussed.

Circle 195 on Reader Service Card

Suitable for Industrial Application:

Automatic "package" controls, suitable for virtually any industrial application where a chemical or mechanical function can be measured electrically, are described in a 16-page catalog issued by Tipp-Tronic, Inc. Applications of units discussed in the catalog include control of temperature, torque, viscosity, current, voltage, timing of welding, conveyor overload, speed, plating, battery charging, radiation, mois-

← **Circle 131 on Reader Service Card**

ture content, pressure, deflection, thickness, weight, color and light. The controls contain a continual reading of the signal and are available with shut-off, sampling, cycling and pulsing action.

Circle 196 on Reader Service Card

Simplicity in Hoist Design:

Bulletin DH-504 describes the Wright Electric Roller Chain Hoist, manufactured by Wright Hoist Division, American Chain & Cable Company, Inc. The 8-page booklet lists the construction features of the hoist, which is available in capacities of ¼, ½, 1 and 2-tons. A minimum of moving parts eliminates potential trouble sources, according to the manufacturer.

(Also reviewed in June)

Circle 197 on Reader Service Card

Automatic Net Weighers:

Automatic net weighing machines for packaging, batching and compounding are described in a four-page folder from The Exact Weight Scale Co. Methods of operation, outstanding features and general specifications are included.

Circle 198 on Reader Service Card

High Speed Feeding:

Up to 200,000 items per hour can be fed, oriented or counted with the Hoppermatic, a product of U. S. Engineering Co. It is claimed to be the only parts feeder offering standardization of design, complete from universal pick-up of pockets through orientation and controlled release. The same machine handles an endless variety of items. The entire story is told in a four-page folder available from U. S. Engineering Co.

Circle 199 on Reader Service Card

Movable Walls:

Low cost movable walls you can erect yourself are described in a 27 page catalog by Unistrut Products Company. Many framing patterns, together with the simple steps of installation, are contained in the literature.

(Also reviewed in June)

Circle 200 on Reader Service Card

Electromagnetic Control Catalogs:

The Automatic Switch Co. has issued seven new Electromagnetic Control Catalogs: Catalog 57-Si provides information on Automatic Transfer Switches; Catalog 57-S2 covers the ASCO line of remote control switches; Catalog 57-S3 describes ASCO magnetically held contactors; Catalog 57-S4 deals with ASCO relays; Catalog 57-S5 includes information on A-C and D-C ASCO solenoids; Catalog 57-S6 describes ASCO electric plant controls; Catalog 57-S is the complete Electromagnetic Control Catalog combining information the other six publications. Any of the books will be furnished if asked for on company letterhead. Address, Automatic Switch Co., Florham Park, N. J.

Circle 201 on Reader Service Card

Featherweight Hoist Handles Tons:

Lug-All winch hoists weigh only 8½ to 15 pounds but have rated capacities of ¾ to 2 tons. Literature from Lug-All Co. shows construction details of the hoists and gives information about accessories which are available. Several types of installations are shown and described in detail.

Circle 202 on Reader Service Card

Crane for Spotting Loads:

A 4-page folder, describing the B-47 Hand Traveling Crane which is available in capacities of 3 tons to 10 tons with spans up to 50 feet has been prepared by the Wright Hoist Division, American Chain & Cable Company, Inc. It contains data on construction details, weights, dimension and other general information of interest to plant engineers. According to the manufacturer, this crane, combined with the Wright double beam trolley and hoist, or with the manufacturer's double beam trolley hoist, makes an excellent installation where spotting of load is more important than fast travel speed.

(Also reviewed in June)

Circle 203 on Reader Service Card

Expendable Pallet Data:

The National Wooden Pallet Manufacturers Association has published a booklet entitled, "What You Should Know About Expendable Pallets". It gives valuable information on how to order expendable pallets, types, construction standards, types of fastenings tolerances and rules for application.

Circle 204 on Reader Service Card

Light Weight Portable Nailer:

A high speed portable nailing air-tool, the Calwire Cyclamatic, weighs only five pounds but is powerful enough to drive either double or single pointed nails up to two inches in length. A data sheet from California Wire Products Co., Inc. claims that the unit is fast enough for high speed production line use.

Circle 205 on Reader Service Card

Packaging Cost Reduction:

"How to Ship More Economically in Corrugated Boxes" is the title of a new booklet published by Hinde & Dauch. It discusses packaging cost reduction—from original package design to final product shipment. Information on the planning of the shipping department and on economy considerations in the packing, sealing, warehousing and shipment of corrugated boxes is included.

(Also reviewed in June)

Circle 206 on Reader Service Card

Lumber Strapping System:

A strapping system which cuts cost of packaging and handling lumber is the subject of a four-page brochure from Brainard Steel Division of Sharon Steel Corp. Photographs and data tell how the system cuts costs both at the mill and at the lumber yard.

Circle 207 on Reader Service Card

"Meaningful Marks":

A reprint of an article concerned with the marking of products and materials with trademarks, size, number, grade, model, brand and name of manufacturer is available from The Acromark Company. The article states that the marking of products was introduced as early as 1363, by the Goldsmiths' Company, in London. It recorded the date of manufacture, the maker's name and attested to the purity of the metal. The article goes on to describe the history of product marking, and illustrates various markings and marking equipment.

Circle 208 on Reader Service Card

Completely Automatic Packaging:

Automatic case opening, loading and sealing equipment for completely automatic packaging production lines, is the subject of a 6-page bulletin offered by J. L. Ferguson Company. The illustrated folder contains data on the company's Packomatic packaging machinery, including regular and high speed single tier case loaders, multiple tier case loaders, case openers and positioners, and the automatic side case gluer and compression sealer.

(Also reviewed in June)

Circle 209 on Reader Service Card

DC Battery Charger for Industry:

The Christie Stavolt automatic battery charger is the subject of Bulletin BC-A-57-1, published recently by The Christie Electric Corp. This unit is a precision charger for industrial and military use. According to the manufacturer, it requires neither experienced help nor advance preparation.

(Also reviewed in June)

Circle 210 on Reader Service Card

Flow Equipment Advancements:

A catalog by Speedways Conveyors, Inc. features several new engineering advancements in flow equipment. Among the device covered are: a versatile hydraulically controlled portable power belt conveyor, called the Speedlift; a power booster, caller the Speedboster; and the Permalift, a floor-to-floor belt conveyor. Other new developments in the Speedways line are included.

Circle 211 on Reader Service Card

Case Opener-Former:

The Formnumatic machine, subject of a data sheet from Schroeder Machines Corp., is claimed to be a new engineering achievement in automatic packaging machinery. Entirely pneumatically driven, it automatically selects a flat case, advances it, applies glue, opens and forms, folds in the bottom flaps and seals. It is only nine feet long and approximately 22 inches wide.

Circle 212 on Reader Service Card

Blocks for Builders:

Tackle blocks designed to meet the requirements of contractors and builders are the subject of a new booklet available from Madesco Tackle Block Co. Included are complete details and specifications of a variety of blocks and accessories. In many instances suggested uses are listed.

Circle 213 on Reader Service Card

Flow Charts:

It's easy to make flow charts when you use Chart-Pak, says literature from Chart-Pak, Inc. Catalog tells how to save time and money and keep confidential material in your own desk.

(Also reviewed in June)

Circle 214 on Reader Service Card

Easy-To-Assemble Storage Racks:

Sturdi-Bilt adjustable storage racks for low-cost storage of pallets, skids, dies, bulk objects, etc. are described in an 8-page brochure by Sturdi-Bilt Engineering Co. "Float Wedge Construction" allows the units to be erected quickly, rearranged instantly, relocated or adjusted without the use of tools, bolts, nuts or welding. Three basic parts form the structure; upright frame, support bars and floating wedge. Racks can be constructed for loads of virtually any size or capacity.

(Also reviewed in June)

Circle 215 on Reader Service Card

Catalog on Photoelectric Developments:

Plug-in mounted photoelectric controls and light sources; miniature phototube and light source heads with installation diagrams; "one package" photoelectric controls, current surge actuated electronic controls, and combined photoelectric and timing controls are discussed in a catalog supplement released by Autotron, Inc.

Circle 216 on Reader Service Card

Portable Hoist or Pull Unit:

"Griphoist", a light weight portable, manually-operated hoisting and pulling machine is discussed in a bulletin released by Princeton Griphoist, Inc. Rated at 3300 pounds single line pull, it handles 6 tons with block and tackle. It operates with a wire rope instead of a chain. The wire rope (½" diameter —no limit in length) passes through the machine between two pairs of steel jaws which grip alternately. The manually-operated telescope handle furnishes the power that pulls, lifts, or lowers the weight.

Circle 217 on Reader Service Card

Fastener That Replaces Nails:

A type of spring clamp fastener that replaces nails is described in a bulletin released by Lumen, Inc. According to the manufacturer, boxes closed with the fasteners resist damage from impact to a high degree. This is because the fasteners, called Klimp, is an L-shaped spring clamp that functions similarly to the spring on a car. Complete box preparation instructions and dimensions are included.

Circle 218 on Reader Service Card

How Air Saves Dollars:

"How to Pull Dollars Out of Thin Air" is the title of brochure from Fuller Co. Fuller-Kinyon conveying systems, Airveyors and Airslides are explained. A comprehensive table lists 97 types of materials which can be handled by Fuller Equipment and tells which of Fuller's three kinds conveying equipment are best suited to each material.

Circle 219 on Reader Service Card

Instructions for Converting To LP-Gas:

Step-by-step instructions presenting all information necessary to convert industrial trucks to LP-Gas operation have been published in an illustrated folder, available from Beam Products Mfg. Company. Beam conversions include all safety features; built-in vacuum lockoff, electric solenoid valve, vacuum safety switch and hydrostatic relief valve. All equipment carries Underwriters' Laboratories approval. The folder includes a complete installation diagram and explains operation.

Circle 220 on Reader Service Card

Fiber Glass Tote Pans:

Industrial tote plans that stack and nest in their own dimensions without special attachments or pallets are described and illustraetd in a brochure from G. B. Lewis Company. Specifications and ordering information are included. Description of vibration, incline and impact tests is given. According to the manufacturer, the fiber glass pans will not rust, rot shatter or dent. They resist water, oil, most chemicals and withstand temperature extremes.

Circle 221 on Reader Service Card

Round Strapping Information

A brochure describing steel strapping equipment suitable for tying for shipment products weighing up to 100 pounds has been published by United States Steel's Gerrard Steel Strapping Div. Three separate models of strapping machines, and methods of using them, are shown.

(Also reviewed in June)

Circle 222 on Reader Service Card

Edge-Wrap Packaging:

Simplicity in packaging a variety of fragile products is provided by Susrap a pre-formed fibre board wrap-around packaging material. Literature available from Vanant Co., Inc. illustrates the use of Sus-Rap for protecting windshields, mirrors, clocks, instruments, lighting fixtures, and many other easily damaged items.

Circle 223 on Reader Service Card

Vulcanized Fibre Containers:

Material handling containers made of vulcanized fibre are described and illustrated in a booklet available from Spaulding Fibre Company, Inc. According to the manufacturer, the vulcanized fibre is chemically inert, tough, strong and smooth. Containers made of this material are widely used to handle food products, rubber products, plastics, explosives, textiles and a wide variety of parts and materials. Described in the bulletin are: standard types of light weight boxes, special design boxes, seamless cans, barrels, caster mounted trucks, and special trucks.

Circle 224 on Reader Service Card

Push-Button Order Filling:

Want to know how one operator at a console can control a complex order picking system? It is being done at Gallo Sales Co. where 66 gravity roller storage lines in a three-deck arrangement are controlled entirely by push buttons. The system, developed by Mathews Conevyer Co., is described and illustrated in detail in a folder which was published recently.

Circle 225 on Reader Service Card

Package Design Formula:

Container Laboratories, Inc. has developed a formula which it claims leads to better packaging at lower cost. It is consulting services plus research and development plus design and engineering plus testing equals better packaging at less cost. It is discussed in detail in a recently published booklet.

Circle 226 on Reader Service Card

Lists Truck Advantages:

A full color brochure describing the design, operation and advantages of the Clarklift-30 is now available from the Industrial Truck Division, Clark Equipment Company. The Clarklift-30 is a gas-powered truck with a 3000 pound capacity. The literature illustrates such features as the swing-up hood, one lever upright control, self-adjusting brake and automatic transmission. Graphs, sketches and charts provide complete specifications.

(Also reviewed in June)

Circle 227 on Reader Service Card

Describes Portable Conveyors:

Baughman Manufacturing Company has announced publication of literature describing two portable screw conveyors. According to the manufacturer, the Q-52 Porta Loader can deliver up to a ton a minute of grain or other free-flowing material. With the Q-52 there is no need for tie removal or pits when unloading freight cars. The Q-53 Porta Loader handles up to 2500 bushels of grain per hour. It is extendable from 30 feet to 60 feet. A special hopper attachment which is ideal for unloading dump trucks, is available as an accessory. Both conveyors can be used with a self-feeding flat storage screw attachment designed to work itself into grain stored in any flat area.

Circle 228 on Reader Service Card

Nationwide Pallet Service:

Atlas Pallet & Lumber Sales, Inc. reports, in a recently issued four-page bulletin, that prompt service and freight savings are assured by its nationwide network of pallet mills. Outstanding features of Atlas pallets are described in the literature.

Circle 229 on Reader Service Card

Oven Controls:

An electric oven control with preheat switch, designed for use in domestic cooking ranges, is described in a four-page bulletin now available from Robertshaw-Fulton Controls Company. In addition to model N1 oven control, a special variation for shallow installations—model N12—is also described. Both models are double pole, snap acting temperature controls. The bulletin contains many informative cut-away and installation diagrams.

Circle 230 on Reader Service Card

New Models on Pneumatics:

Three new lift trucks and a new mobile crane, all on pneumatic tires, are featured in a 12-page brochure just published by Hyster Company. The Hyster 30, 40 and 50 lift trucks have capacities of 3000, 4000 and 5000 pounds respectively. The new Model KE Kerry Krane has capacities up to 10,000 pounds, depending on boom length and position. In addition, the booklet also describes the complete Hyster line of cushion tired trucks, various load grabs, and the exclusive Monomast.

(Also reviewed in June)

Circle 231 on Reader Service Card

Automatic Packing, Printing, Counting:

Packmaster automatic packaging machines will reportedly complete 80 3 x 3-inch packages per minute. They will make 3, 4, or 6-inch square packages from a variety of barrier materials. All the details, including descriptions of several variations of the machines are included in a six-page folder published by Packmasters, Inc.

Circle 232 on Reader Service Card

Tractors For Industrial Applications:

Tractors and industrial equipment in action are illustrated and described in a 12-page bulletin available from Ford Motor Company, Tractor and Implement Division. The bulletin contains abbreviated specifications and suggested applications.

Circle 233 on Reader Service Card

Application Data On Single-Phase Induction Motors:

Fans, blowers, pumps, air and refrigeration compressors, conveyors, masonry saws, sanding machines, hammer mills and other farm and general purpose applications are the main uses of single-phase induction motors discussed in a bulletin released by General Electric Company. Application data, types, ratings, frame sizes, and construction features of dripproof and enclosed single-phase induction motors are discussed.

Circle 234 on Reader Service Card

Pneumatic Tacker-Stapler:

The Industrial Fastener Div. of The Heller Corp. has issued a 4-page bulletin (1503-17) on its Pneumatic Tacker-Stapler, designed for one-hand high speed industrial fastening. The bulletin gives specifications on the stapler with and without anvil, describing its various applications on production lines, in shipping rooms and for maintenance departments.

(Also reviewed in June)

Circle 235 on Reader Service Card

Platform Trucks for All Uses:

Four-wheel platform trucks for hand or dragline operation are described in a 4-page bulletin available from Myers Truck & Caster Co. These trucks fea-

ture armored decks of seasoned hardwood, and wheels with roller bearings and grease retaining washers. Steel platforms are also available. Matching trailers are available for all trucks, and any style dragline can be supplied.

(Also reviewed in June)

Circle 236 on Reader Service Card

Power-Free Conveyor Data:

A two-page bulletin from E. W. Buschman Co. tells the story of Buschman Triple-T Power-Free Conveyor. The conveyor is said to be ideal for handling light to medium weight loads. Materials can be moved along a level track, up and down inclines and through tongue switches. They can be automatically switched to the left or right, onto free lines for storage or for operations where the product must not move. All switches can be manually controlled or operated by air cylinder and solenoid valve.

Circle 237 on Reader Service Card

Describes Equipment Available For Repowering Old Machines:

Many old machines thought to be at life's end because power is down can be made productive again by repowering with a specially designed engine package, according to "Repowering Made Easy", a booklet released by Caterpillar Tractor Company. It describes through illustrations and successful installations how the engine packages help raise production on old machines. Also listed are some of the optional equipment and factory service available for repowering.

Circle 238 on Reader Service Card

Illustrates Industrial Storage Racks:

Pallet, skid, bar stock, shelf, slide, live storage, sheet, roll, furniture, appliance, tire, die and display racks are illustrated and described in a bulletin issued by M-H Standard Corp. Several alternate types are shown for many of the above, namely: quick adjusting, cantilever, portable, powered, horizontal and vertical storage. Most designs feature adjustability, bright zinc finish, all metal construction, advanced engineering, rugged construction, easy erection and attractive appearance, according to the manufacturer. Standardized components for prompt delivery, engineering service and installation are also explained.

Circle 239 on Reader Service Card

Theory On Pneumatic Control Instruments:

Ten pages of general automatic control theory is contained in a bulletin on pneumatic control instruments released by The Bristol Company. It describes in simplified terms and illustrates the basic concepts of narrow band, proportional, reset, derivative, and reset plus derivative control actions. Also covered are selective control, cascade control, and ratio control.

Circle 240 on Reader Service Card

Non-Powered Tool Cuts Lifting:

Manual lifting of heavily laden tote boxes is eliminated by the Rolock "George" Roller Toter, manufactured by Rolock, Incorporated. The tool employs the principle of leverage to transfer loaded containers onto its rollers; three simple motions by man or woman accomplish the actual lifting. It is fully described and illustrated in a bulletin available from the company.

(Also reviewed in June)

Circle 241 on Reader Service Card

Facts on Design of Industrial Wheels:

All data for the line of industrial wheels, manufactured by R & K Industrial Products Company, are discussed in a manual released by the firm. Details of design and construction of the R & K "Loadmaster" wheel with Neoprene tires are described, together with the line of standard aluminum, balloon cushioned, pressed steel, and micarta wheels. Specifications and uses of various types of bearings, seals and rubber compounds are set forth in detail.

Circle 242 on Reader Service Card

Fractional Horsepower Motors:

Design advantages and components in integrated insulation system of general purpose fractional horsepower motors are discussed in a bulletin released by General Electric Company. The motors are used in the equipment manufacturing field on such applications as power tools, heating and ventilating equipment, compressors, fans, water pumps, and machine tools. Publication facilities, quality control tests, application-engineering assistance, and small motor service station plan available for general purpose fractional horsepower motors are also discussed.

Circle 243 on Reader Service Card

Facts on LP-Gas:

A complete and informative booklet on LP-Gas and LP-Gas carburetion equipment has been published by American Liquid Gas Corporation. It contains several pages of factual data regarding advantages, characteristics and operation. In addition, it explains the functions of various types of LP-Gas carburetion equipment and illustrates the products manufactured by Algas. Every phase of LP-Gas carburetion equipment including the fuel tank and necessary fittings is covered. Also explained in detail are the various types of conversion systems that are being used and the equipment best suited for each type of installation.

Circle 244 on Reader Service Card

Marking on Cylindrical or Cone-Shaped Parts:

Names, trade-marks, part numbers or special letterings are quickly rolled into parts, with a rotary, table marking machine described in a bulletin released by Jas. H. Matthews & Company. Automatic or manual operated machines are available. Parts to be marked are fed into the continuously rotating work table where they're quickly positioned, marked and ejected. The part revolves between an adjustable spring-loaded die and a pressure-dial located on the center of the table.

(Also reviewed in June)

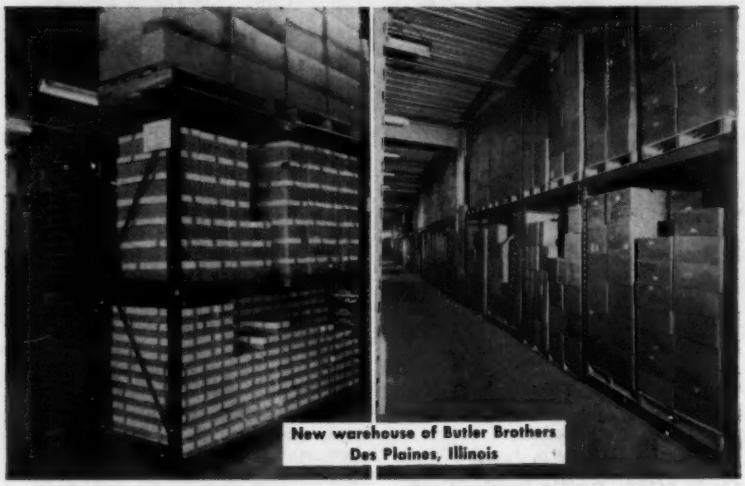
Circle 245 on Reader Service Card

Reprint Tells How To Automate Machine Lubrication:

How to solve maintenance problems by making a changeover from hit-or-miss manual machine oiling to automatic lubrication is covered in detail by a six-page illustrated reprint offered by Bijur Lubricating Corporation. Written by an applications engineer, "Make Your Machines More Automatic" explains how such systems provide dependable performance with minimum downtime in the packaging field. A detailed inspection at a number of manufacturers provides specific methods of lubricating enclosed bearings, preventing product spoilage or contamination, and keeping production at maximum levels.

Circle 251 on Reader Service Card

yes ANY STORAGE RACK LETS YOU STACK FOR EXTRA SPACE—



New warehouse of Butler Brothers
Des Plaines, Illinois

but ONLY STURDI-BILT makes storage space SO VERSATILE!

- Quickly erected!
- Instantly rearranged!
- Simply adjusted! • Easily relocated!
- No tools, nuts, bolts or welding!
- No special labor needed at any time!
- No cross bracing of any kind!
- All parts 100% reusable!
- Safe loading of bars up to 8,000 lbs. per pair.

Sturdi-Bilt makes the most of your storage facilities! It doesn't matter what you store — how much, how heavy or how big — Sturdi-Bilt Racks are *simply* adjusted to meet your need.

No "One Way" storage system here — instead you receive complete freedom in types of storage— Pallets, Skids, Dies or Bulk — plus flexibility for variations in size, and economies in set-up and daily use.

Only STURDI-BILT Racks have "Float Wedge Construction"
1. Simply insert Sturdi-Bilt Wedge Lock . . .
2. . . . into the slots in the factory pre-fabricated upright frame . . .
3. . . . and lock to the horizontal safety support bars.
3"
Store from either side — there's no sway or cross bracing.
Space your openings anywhere on 3" centers — simple to place — quickly respaced.
Flush decking design eliminates obstructions for easy placement and removal of goods.

Sturdi-Bilt

U. S. Patent No. 2760650 Other patents pending.

WRITE FOR FOLDER No. F-77

Sturdi-Bilt Engineering Company

2501 Peterson Avenue Chicago 45, Illinois

Circle No. 264 on Reader Service Card for more information

USEFUL LITERATURE

Continued

Explains Raw Materials Used In V-Belts:

A booklet on the raw materials used in producing V-belts has been issued by the Goodyear Tire & Rubber Company. It is entitled, "V-Belts, Their Raw Materials." Natural and synthetic rubbers, cotton and synthetic cords, rubber chemicals and steel cables used in the manufacture of the firm's V-belt line are subjects for one-page explanations of each material's role in the final product.

Circle 248 on Reader Service Card

Details Portable Belt Conveyors:

A 4-page bulletin with complete details on lightweight portable belt conveyors has been published by The E. W. Buschman Company. It details features and cost-cutting advantages of aluminum conveyors with incline hydraulically adjustable to desired angles by finger-touch operation. All information on available sizes, as well as drawings and charts of proper operational adjustments, integration with gravity and roller sections, detailed component specifications, and optional equipment, is given. It illustrates how the boom section, with floor stands and other optional equipment, adapts unit for horizontal, inclined and interfloor use, and as a booster in automated conveyor lines.

Circle 249 on Reader Service Card

Full Specifications On Casters and Wheels:

A caster and wheel catalog, No. C-57, illustrated with photographs and cutaway sections, has been published by The Fairbanks Company. Construction and benefit descriptions and full specifications are provided for the complete line of casters and wheels including the "Lockweld" steel casters for regular and medium duty. Steel casters for heavy duty and trailer applications, semi-steel casters, vulcanized rubber tired wheels, solid rubber and pneumatic rubber tired wheels and semi-steel wheels are included.

Circle 250 on Reader Service Card

BAKER fork truck with SIDE-SHIFTER
speeds unloading of boxcars

● The 4,000-lb. capacity Baker gas fork truck illustrated is equipped with a side-shifting fork carriage, permitting the operator to move the forks laterally—with or without load—4¼ inches in either direction from center. This substantially reduces maneuvering time—making it easier and faster to line up forks with the load, and to negotiate corners, narrow doorways, and congested areas when the length of the load exceeds the width of the truck.

This attachment is ideally suited to the job of unloading lumber from boxcars. Inside the car, where it must operate in extremely close quarters, it speeds picking up the load since alignment is made by shifting the forks instead of maneuvering the truck. Side-shifting also makes it much easier and quicker to clear the sides of the car doors, travel through narrow, congested aisles, and stack the lumber in storage areas.

Baker gas fork trucks are available in 2000 to 7000 lb. capacities. Side-shifter attachments are available for all sizes. Write for full information.

Baker
industrial trucks

THE BAKER-RAULANG COMPANY
1219 WEST 80th STREET • CLEVELAND 2, OHIO
A Subsidiary of Otis Elevator Company

Otis

Circle No. 159 on Reader Service Card for more information

MULTI-STORY WAREHOUSING . . .

(*Continued from page 77*)

fork trucks to deliver loads continuously while the elevator is returning for additional loads—thereby preventing the tying up of fork trucks.

Otis considers it a waste of equipment to permit fork trucks to travel on the elevators with the loads. Instead, a fork truck on one floor delivers pallet loads to the conveyors in front of the elevators. At their destination the loads are removed by another fork truck stationed there. This policy keeps trucks available at all times for their intended purpose—the continual movement of merchandise.

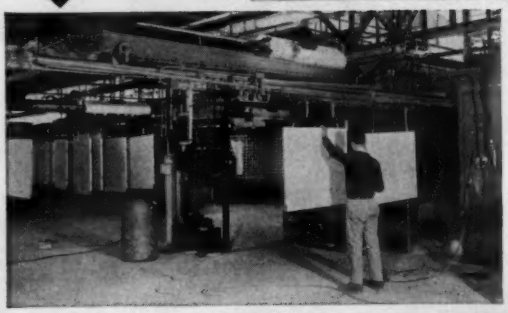
It is also a policy at Otis never to operate fork trucks in highway trucks or trailers since, in the past, they would occasionally break through truck floors. When a fork truck would break through, it would be temporarily out of action, interrupting the sequence and resulting in waiting time throughout an entire section. Now a pallet dolly is always available at each truck dock. As the palletizing crew works to the front of the trailer, a pallet is placed on the dolly and loaded. The loaded pallet and dolly are then rolled to the rear of the trailer, where a fork truck picks up the pallet load. Loads move safely and easily on these dollies because the weight of the load is spread out over several rollers and will bridge holes or soft spots in a trailer floor. The dolly is a 36-in section of 24-inch conveyor. When it is used, the rollers are placed against the floor so that the load rests on the side rails.

Half the fork trucks used by the company are 2000-pound capacity, stand-up models, spread throughout the various floors. Drivers of these trucks are highly proficient. As they back away from loads deposited on the conveyors they use the forks to "push" pallets so they will consistently roll to within six inches of the elevator door. This provides room for additional pallets to be placed temporarily on the conveyor outside the elevators.

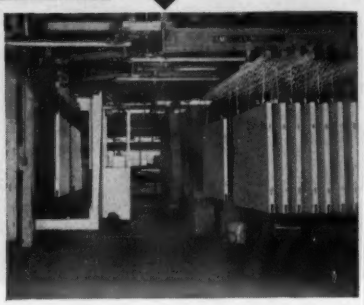
Large appliances are handled without pallets or forks. A simple

Landahl picks up panels as MonoRail pushes them from degreasing.

MonoRail pneumatically pushes a "car" of panels into a finish spray booth.



Finished panels are pushed by MonoRail from the bake oven.



Automatic Finishing with Power LANDAHL and AMERICAN MONORAIL

Space was saved and automatic finishing achieved by combining two overhead handling systems.

American MonoRail cars carrying metal panels move through degreasing, priming, finishing and baking. In each operation either loading or unloading is performed automatically by power—the Landahl Chainless Conveyor acting as a "pusher" over most of the system.

Here is "team work" engineering to take advantage of the flexibility of both American MonoRail and Landahl Chainless Conveyors.

This efficient system is installed at Fostoria Mfg. Co., Fostoria, Ohio, for finishing metal panels for office partitions.

For details on how American MonoRail or Landahl Conveyors can cut your handling costs, write today.

Write for Bulletin C-1 today

Member of The Materials Handling Institute, Inc. & MonoRail Manufacturers' Association.

For Power Driven Conveyors, Use Landahl Chainless Conveyors

AMERICAN MONORAIL COMPANY

OVERHEAD HANDLING EQUIPMENT

13129 ATHENS AVENUE • CLEVELAND 7, OHIO

(IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.)

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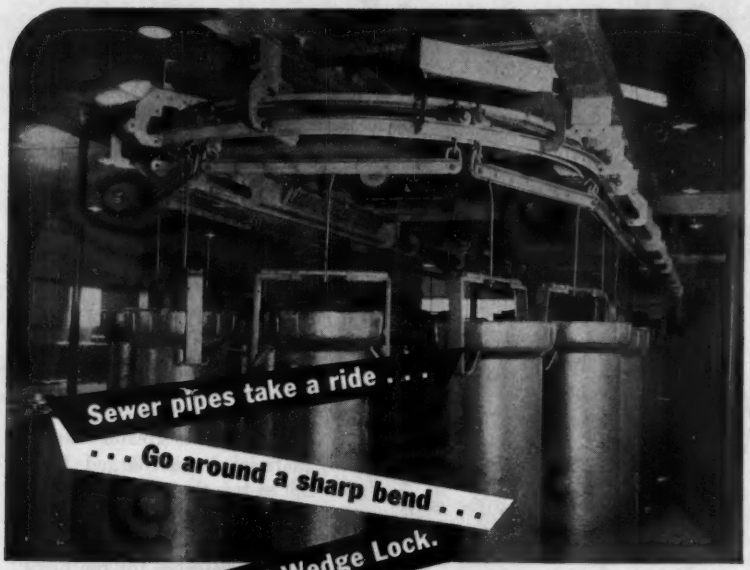
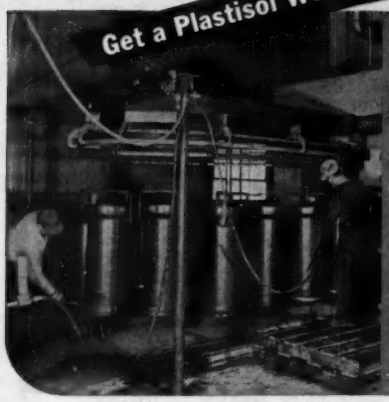




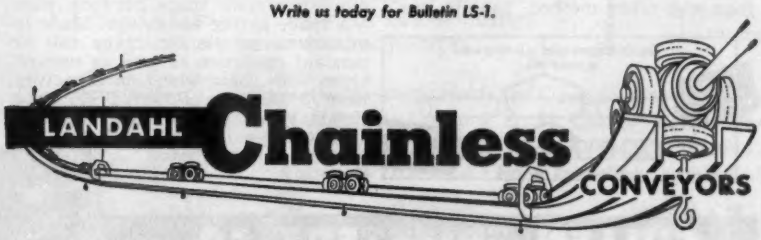
LANDAHL CONVEYOR
takes pipe thru an oven to cure Plastisol Wedge Locks

Thirty-seven pound pipes move on Landahl Chainless Conveyor thru a 400° oven. A crew of 4 men load and unload the conveyor to keep up a steady production of Plastisol Wedge Locks. Continuous movement assures uniform baking time. Overhead handling leaves the floor area free for faster working, easier maintenance.

Other benefits of LANDAHL Chainless Conveyors include:

- No Chain to Wear
- No Sprockets Needed
- No Cable to Sag
- Permits Short Radius Turns
- Low Cost Maintenance
- Low Initial Cost
- Ball and Socket Joints
- Caterpillar Drive Unit

Write us today for Bulletin LS-1.



The LANDAHL CONVEYOR CO., 13129 Athens Ave., Cleveland 7, Ohio
A SUBSIDIARY OF THE AMERICAN MONORAIL COMPANY
Circle No. 76 on Reader Service Card for more information

device, consisting of a vertical plate and bumper, is attached to the carriage of a truck in place of the forks. The plate lifts under the flap of the inter-locked cover, and the bumper holds the carton in a vertical position. This method of handling saves time of loading cartons on and off the pallets, reduces the pile height when stacking, and eliminates possible damage from the forks striking the carton.

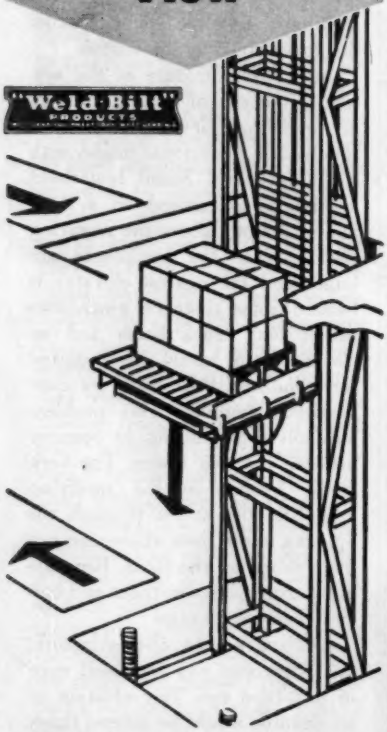
An unusual feature of the system is the use of a fork truck as an inter-floor elevator. The truck involved is a sit-down model with a 130-inch lift. Small household appliances are stored on a floor almost directly above the receiving docks. Since the appliances are bulky and the nearest elevator is located some distance away, two rather long truck hauls and an elevator trip would be required for handling these loads by conventional methods. This problem was solved by cutting an opening between the two floors. The fork truck, located in the receiving area lifts the crates through the opening to the floor above and sets them down on the floor. Here another truck removes them and carries them to storage.

According to the company, this truck can pay for itself even in part-time use. The addition of an elevator would be several times the cost of the truck and the extra handling to existing elevators would be time-consuming and would tie up other trucks. This phase of the system follows the pattern that has been prominent in Otis' successful multi-story operation: maximum utilization of all equipment.

Photos courtesy Lamson Mobilift Corporation.

I've got it figured one fork lift will replace seven mules, six drivers and four CLEAN UP MEN.

NEW... for Floor-to-Floor Production Flow



Weld-Bilt VERTICAL TRANSPORTATION

Here's conveyor automation between floors — one, two, or three floor levels — with minimum remodelling. Automatic loading, unloading, lifting or lowering to match conveyor speed. Controls, brakes, switches, platforms — all engineered to your needs.

Write for profitable suggestions on your own floor-to-floor conveyorizing with Weld-Bilt "Vertical Transportation"

WEST BEND EQUIPMENT CORP.
MATERIALS HANDLING ENGINEERS
335 Water Street • West Bend, Wisconsin

Circle No. 133 on Reader Service Card

INCLINATION ANGLES...

(*Continued from page 63*)

fN. Resolving forces perpendicular to the plane of the belt gives:

Eq. 1: $N - W\cos\theta = 0$

Eq. 2: $N = W\cos\theta$

Resolving forces parallel to the plane of the belt gives:

Eq. 3: $F_3 = F_2 - F_1$

$Wa/32.2 = fW\cos\theta - W\sin\theta$

Solving to find the acceleration given to the material by the belt gives:

Eq. 4: $a = 32.2\ (f\cos\theta - \sin\theta)$

We note that weight, W, of the material drops out, and the acceleration is independent of the weight.

We need to know the distance x the piece must travel to attain belt speed. We may find this in the following way:

Write T_1 = time, secs. of travel of belt through distance L. Then

Eq. 5: $T_1 = L/S$

and T_2 = time, secs. required for piece to accelerate from V_1 velocity to belt speed. Then:

Eq. 6: $T_2 = (S - V_1)/a$

During this time, T_2, the piece has a mean velocity of: $(S+V_1)/2$

Eq. 7: $V_m = (S+V_1)/2$, and the distance x that the piece travels during this time is Eq. 8:

$x = T_2V_m = (S^2 - V_1^2)/2a$, and this is also the distance of *slip* of the material on the belt.

Now two cases arise:

(a) When x is found to be less than L, the material accelerates to belt speed before leaving the belt.

(b) When x is greater than L, the material is discharged from the belt at less than the belt speed.

The equation for case (a) is developed as follows:

The time required for the piece to travel L is:

Eq. 9: $$T_5 = T_3 + T_4 = \frac{L-x}{S} + \frac{x}{(S+V_1)/2}$$

(See Fig. 1)

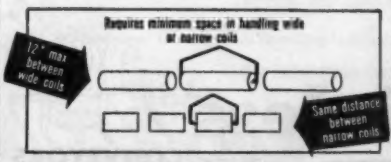
The belt discharge capacity expressed as percentage of ideal ca-

Handling Coil Stock?

CHECK THESE C-F LIFTER ADVANTAGES

- 1 Lifter handles wide range of coil sizes
- Requires minimum of only 10" to 12" between piles —saves storage room
- 1 man operation — eliminates hookers
- Positive grip on coil — no damage to material

• C-F Coil Lifters are saving time and labor in many plants and warehouses because they can pick up, carry and set down a coil of steel faster and safer than any other method. Infinite jaw openings permit handling a very wide range of coil widths... carrying legs open fast, stay open until operator closes them on coil. Narrow legs require minimum space between piles – a space saving advantage. Made in motorized models for crane cab or pendant operation as well as manual types with chain wheel, in capacities from 3 tons up. Powered Rotating Heads available. Opening ranges to suit your requirements. Write for illustrated Bulletin.



CULLEN-FRIESTEDT CO.
1320 South Kilbourn Avenue • Chicago 23, Illinois

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FLOW

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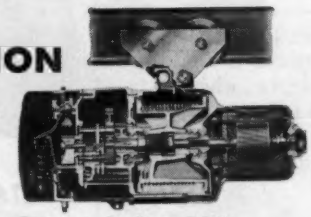
WRIGHT Electric Hoists / for lowest final cost

These features make WRIGHT Speedway Hoists your best buy for—

MORE PRODUCTION

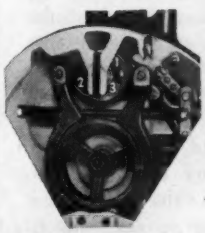


Fine balance and heavy duty design make possible the continuous handling of tough jobs on any duty cycle for which a 30-minute NEMA motor is satisfactory. All gears and pinions are alloy steel, heat-treated. Their ductile core supplies shock resistance to most severe service stresses. Anti-friction bearings throughout.

LONGER LIFE

Strength of gear teeth of WRIGHT Frame 2 and 3 Speedway hoists has been doubled by a change in contour and grain structure of the metal. Internal gear ring with heavy flanged cross section is bolted to drum at six points and provides extreme resistance to distortion.

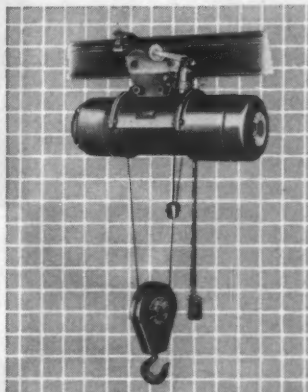
EASIER MAINTENANCE



There is nothing to adjust but the cam to keep brake in perfect adjustment. When excessive load drift occurs... remove the screw shown at Position 1, swing the cam until Position 2 is in line. Replace the screw. Position 3 is provided for the final third of brake lining wear. Brake springs and solenoid never need adjustment.

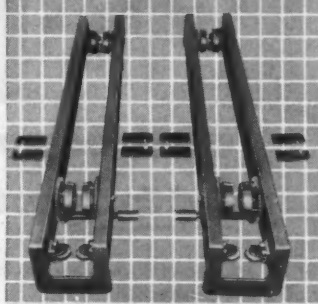
Better performance at lower cost by using WRIGHT units for local-built cranes

SPEEDWAY ELECTRIC HOIST



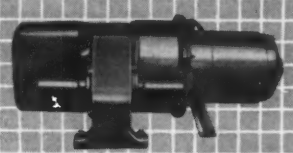
Available in Frame 1, 1½, 2 and 3 sizes with capacities from ¼ ton to 10 tons.

END TRUCKS



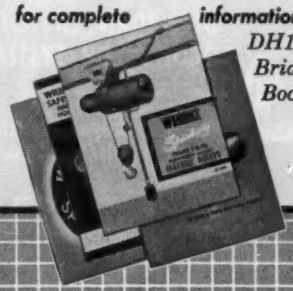
For motor-driven cranes and hand traveling cranes—both top running and under-hung types. Timken bearings throughout. Wide range of capacities.

CRANE DRIVE UNIT



For crane and double-beam trolley propulsion. Electric motor transmits power through fluid drive to well proportioned gear reduction. Units are equipped with WRIGHT designed solenoid "drag" brake. Size 1—with motors to 2 HP. Size 2—with 3 to 7½ HP motors.

for complete information on WRIGHT Hoists and Crane components ask for: **Speedway Hoists:** *(Frame 1) Booklet DH133B, (Frame 2 & 3) Catalog E55A.* **Motor Driven Cranes:** *Underhung, Single Bridge, Bulletin #227; Top Running, Bulletins #DH448 or DH449* • **Crane Drive Units:** *Booklet DH-431A* • **Hand Traveling Cranes:** *Bulletins #DH-468 and #DH-348B*



Wright Hoist Division
AMERICAN CHAIN & CABLE

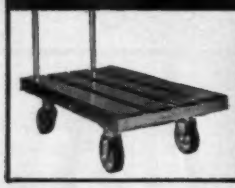
ACCO

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

Magcoa / Tobey aluminum Trucks

Light-weight

NO maintenance



Clean

and easy to keep clean!

- Non-toxic, odorless, stain-free construction
- Exclusive casters– **fully guaranteed**
- Bright, easy-to-clean aluminum
- No painting or special finish required
- Easier to push and steer
- Riveted, flexible bed construction
- Available in many styles and types

For full details use the coupon below.

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INCLINATION ANGLES

Continued

pacity is 100 T_1/T_5 or:

$$\text{Eq. 10: } C\% = \frac{100\ L/S}{\frac{L-X+2x}{S} \quad \frac{}{S+V_1}} = \frac{100}{\frac{1-x+2Sx}{L} \quad \frac{}{L(S+V_1)}}$$

When the material is not given an initial velocity, i.e., when $V_1 = 0$, Equation 10 reduces to:

$$\text{Eq. 10a: } C\% = \frac{100}{1+\frac{x}{L}}$$

The equation for Case (b) is developed as follows: The time of travel of belt through distance L is $T_1 = L/S$. The discharge capacity expressed as percentage of ideal capacity is simply the ratio of T_1 to the last term of Equation 9—$L/S/2x/(S+V_1)$—which reduces to:

$$\text{Eq. 11: } C\% = \frac{100aL}{S(S-V_1}$$

when $V_1 = 0$ this reduces to:

$$\text{Eq. 11a: } C\% = \frac{100aL}{S2}$$

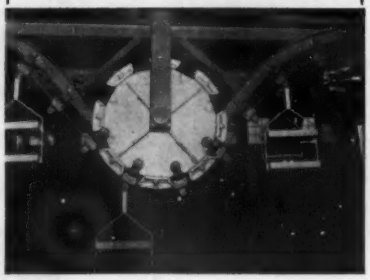
In almost all practical commercial installations the x distance is *less* than the belt travel L, and Equation 10 applies. Equation 11 was developed here to extend the theory over the entire range covering the impractical extreme cases.

Whenever we use Equations 10, 10a, 11 or 11a, we first solve Equations 4 and 8 to put into them. When the value found for a is positive, there is discharge of material. When a is zero there is no discharge. When a is negative, the material slides backward faster than the belt can carry it, and the material will clog up at the point of delivery.

Equations 4 and 10 show several significant things:

1. The percent of discharge capacity changes only slightly as the angle of belt inclination, θ, approaches to within 5 deg. of the critical an-

ECONOMY!!! SAVES SPACE SAVES MONEY



STANDARD DIP WHEELS AVAILABLE IN 3 SYSTEMS

- **LIGHT**
- **MEDIUM**
- **HEAVY-DUTY**

• • •

PERMITS SHARP VERTICAL DIPS AND RISES IN CONGESTED AREAS WITHOUT SACRIFICE OF DRIVE CAPACITY

• • •

Write for our new bulletin on engineered cable conveyor systems "Why Cable"

Territories available to qualified dealers.

DEARBORN CABLE-LINK CONVEYOR SYSTEMS

C-L

DEARBORN FABRICATING & ENGINEERING CO.

19440 GLENDALE AVE. • DETROIT 23, MICH.

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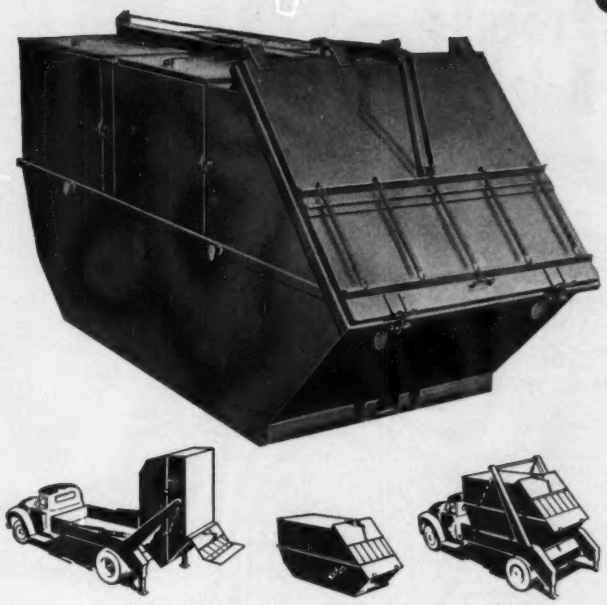

Only LOAD LUGGER gives you these money-saving and safety features

THE LOAD LUGGER SYSTEM OF MATERIALS HANDLING (detachable steel containers handled by a Load Lugger equipped truck) offers many new opportunities to reduce the cost of handling materials of all kinds. In addition, Load Lugger's simple, rugged design and construction give you easier, safer operation, lower maintenance costs, bigger pay loads, lower truck investment.

EASY OPERATION RIGHT FROM THE TRUCK CAB

Lifting, lowering, dumping the container, raising and lowering the stabilizers is done with three simple controls conveniently grouped in the truck cab. On cab-over-engine trucks controls are outside the cab.

LOW-MAINTENANCE DESIGN AND CONSTRUCTION

Simple rugged hydraulic hoist mechanism has a minimum of moving parts. No complicated superstructure, rollers or track. Load Lugger simplicity means less maintenance, less down-time.

NO TRUCK FRAME REINFORCING NECESSARY

Proper weight distribution eliminates excessive weight on rear of truck and the need for expensive frame reinforcement and counterweights which reduce net pay load.

SAFE FOUR-POINT CONTAINER SUSPENSION

Two lifting chain lugs on each side of container are located *above* container's center of gravity. This Load Lugger safety feature prevents the container from flipping over completely while being dumped.

SAFE DUMPING

Load Lugger containers are tilt-type, the load being dumped from the end of the container rather than through the bottom. Complete control of the container and load is maintained throughout the entire dumping cycle. The integral container bottom also prevents leakage of liquids.

GREATER LEGAL PAY LOADS

No sacrifice in total net pay load weight as cubic content of container increases. In travel position, center of gravity of loaded container is *ahead* of the rear axle of the truck. Result is better load distribution and ability to carry bigger pay loads without violating legal axle load limits.

UNOBSTRUCTED FLAT DECK

When not handling containers, Load Lugger can be used as a flat-bed truck to carry equipment and tools, a feature which contributes to Load Lugger's time and money saving versatility. Attachments permit handling of machinery, castings, drums, heavy crates and similar bulky items.

Feature for feature, you get more for your money when you invest in Load Lugger. Let us discuss your material handling problem with you and recommend the Load Lugger which will fit your needs.

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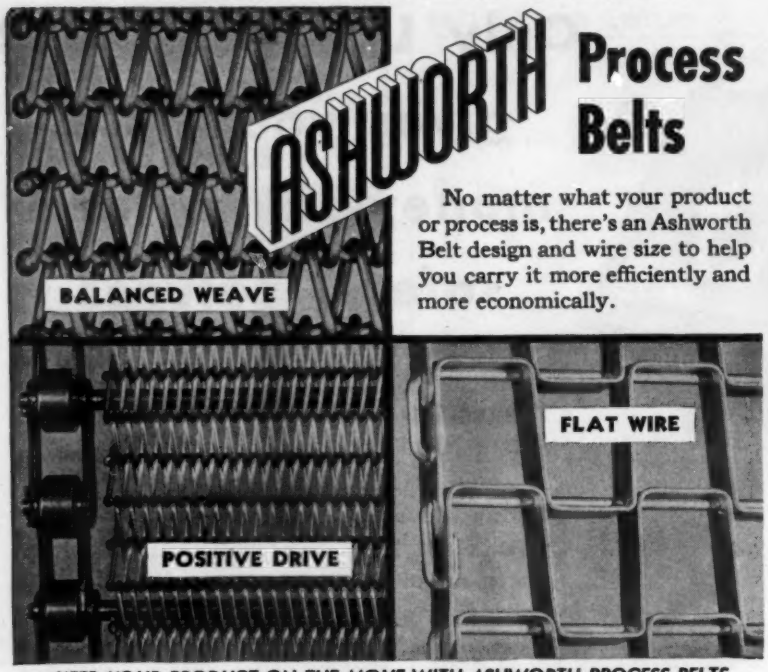
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WRITE FOR ILLUSTRATED CATALOG F 55

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TOUCH and GO!

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"We are very pleased with our Walkie-Worklifter . . . a big help in material handling in our warehouse." Henry Solomon, Lion Knitting Mills Co., Cleveland.

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Modern Materials Handling

Up and away—quickly, safely—even on lightly rated floors and elevators, and in narrow aisles!

Compact Walkie-Worklifters are ideally suited to *touch and go* transporting-stacking jobs because of their ease of operation, light weight and ruggedness.

For example, Walkies may be kept busy stacking unit loads in narrow aisles, storing parts and finished products, loading and unloading trucks; and, for stock picking to fill small orders, the Walkie may be used as a convenient mobile elevator, to carry the operator up to high shelves and bins.

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ECONOMY ENGINEERING 4524 W. Lake St., Chicago 24, Ill.

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gle (no flow), but falls off sharply to 0% in the last degree. This is illustrated in the Table andFig. 2 from calculations made on examples.

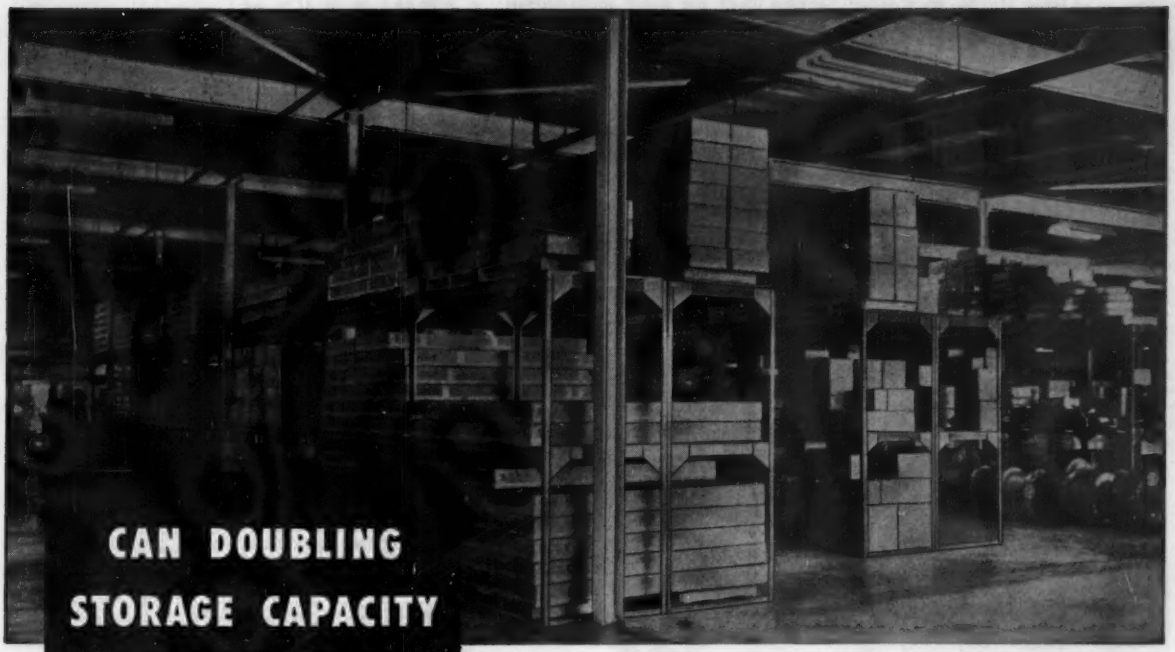
2. Increasing the belt speed, S, does increase the actual delivery of material up to a maximum which occurs at maximum speed Sc; thereafter the discharge decreases.
3. Unless the belt is motionless, some slipping of the material always occurs.
4. The shorter the belt travel distance, L, the lower the percentage of ideal capacity is realized.
5. For a given distance, L, and belt speed, S, the value of our f for a particular material is easily found when the percent of ideal capacity has been determined by a test run.
6. The values of discharge factors f (as defined at the beginning), from calculated examples, average .372 for bituminous coal fines and .530 for wood chips.

We next turn our attention to the critical belt speed. For the usual practical commercial installations, x is less than L, and there is one and only one belt speed that will give maximum discharge. We call this the maximum speed Sc. Above this speed, the discharge capacity decreases.

Some slip of the material on the belt always occurs through the distance x. At low speeds and low angles the slip, x, is small while at high speeds and high angles the slip is large, as may be determined by Equation 8. The equation for determining the maximum speed turns out to be a simple one. It may be developed in the following way:

The discharge capacity of a belt conveyor, neglecting slip of material, is simply SA where A is the mean cross section area of the material on the belt.

Taking slip of the material into



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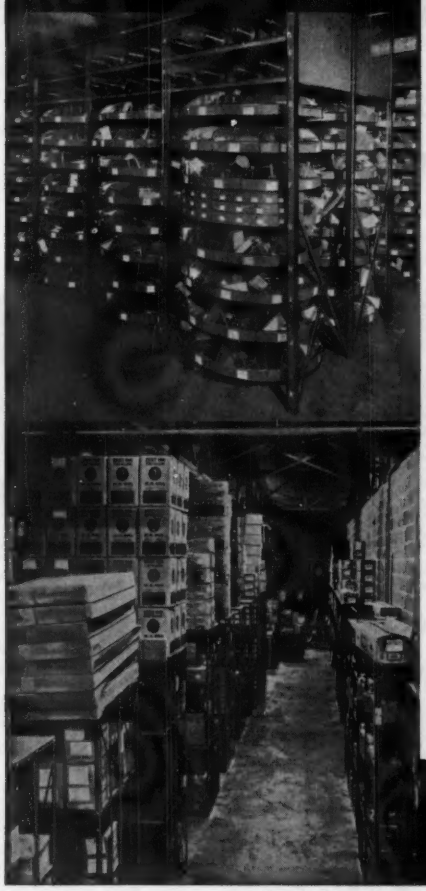

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Methods of storage handling depend, of course, upon bulk of materials stored, volume, turnover, and similar factors. New storage equipment, developed to accommodate these conditions, effectively reduces storage costs. You can benefit from F-G-M long, diversified experience and know-how in this field.

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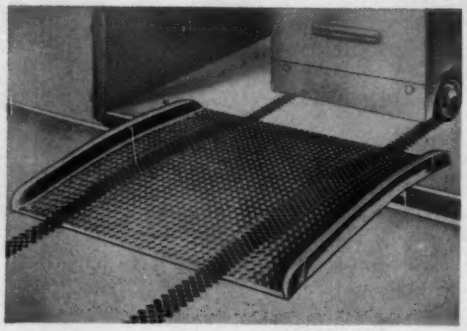

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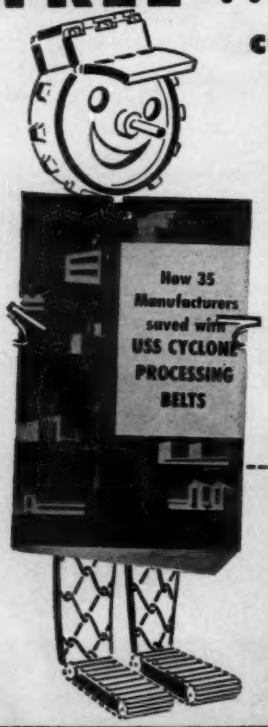

Our new booklet, *"How 35 Manufacturers saved with USS Cyclone Processing Belts,"* contains 35 actual case histories of savings on production costs, materials, time, space, breakage and labor . . . through use of Cyclone Belts.

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UNITED STATES STEEL

INCLINATION ANGLES

Continued

consideration, we divided Equation 10 by 100 to reduce it from percentage to a decimal fraction, and multiply the result by *SA*. This gives the actual discharge capacity—

$$\text{Eq. 12: } C = \frac{AS}{1 - \frac{x}{L} + \frac{2Sx}{L(S+V_1)}}$$

Substituting Eq. 8 in this gives:

$$\text{Eq. 13: } C = \frac{A}{\frac{1}{S} - \frac{(S^2 - V_1^2)}{2aLS} + \frac{2(S - V_1)}{2aL}}$$

Let $m = \frac{1}{2aL}$, then:

$$\text{Eq. 14: } C = \frac{A}{\frac{1 - m(S^2 - V_1^2) + 2m(S - V_1)}{S}}$$

Expanding this gives:

$$\text{Eq. 15: } C = \frac{A}{\frac{1 - mS + mV_1^2 + 2mS - 2mV_1}{S}}$$

Let $C = \frac{A}{U}$ Then:

$$\text{Eq. 16: } \frac{dC}{dU} = \frac{-A}{U^2}$$

$$\text{Eq. 17: } \frac{dU}{dS} = \frac{-1}{S^2} - m - \frac{-mV_1^2}{S^2} + 2m$$

$$\text{Eq. 18: } \frac{dC}{dS} = \frac{dC}{dU} \cdot \frac{dU}{dS} = -A\left(\frac{-1}{S^2} - m - \frac{-mV_1^2}{S^2} + 2m\right)$$

$$\frac{(1 - mS + mV_1^2 + 2mS - 2mV_1)^2}{S} = 0$$

The term in parenthesis in the numerator is the one equal to zero; so:

$$\text{Eq. 19: } \frac{-1}{S^2} - m - \frac{-mV_1^2}{S^2} + 2m = 0$$

(Continued on page 154)

Only New HALLOWELL *ERECTOMATIC.* Steel Shelving

has a time-saving, positive built-in lock—plus these features:

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INCLINATION ANGLES

Continued

Eq. 20: $Sc \sqrt{\frac{1 + V_1^2}{m}}$

Substitue the value of m given above:

Eq. 21: $Sc = \sqrt{2aL + V_1^2}$

This is the general equation for the maximum belt speed.

In the particular case when $V_1 = 0$ we use:

Eq. 22: $Sc = \sqrt{2aL}$

We may put this into Equation 10a.

and for the case when $V_1 = 0$

Eq. 23: $C\%$ max. $= \frac{100}{\frac{1+(\sqrt{2aL})2}{2aL}} = \frac{100}{2} = 50\%$ max.

In the examples of Fig. 2, it is assumed that the material is dropped on the belt from a chute or hopper through a short sloping apron, so that there is no backward component of *velocity* of the material as it contacts the belt, and therefore $V_1 = 0$.

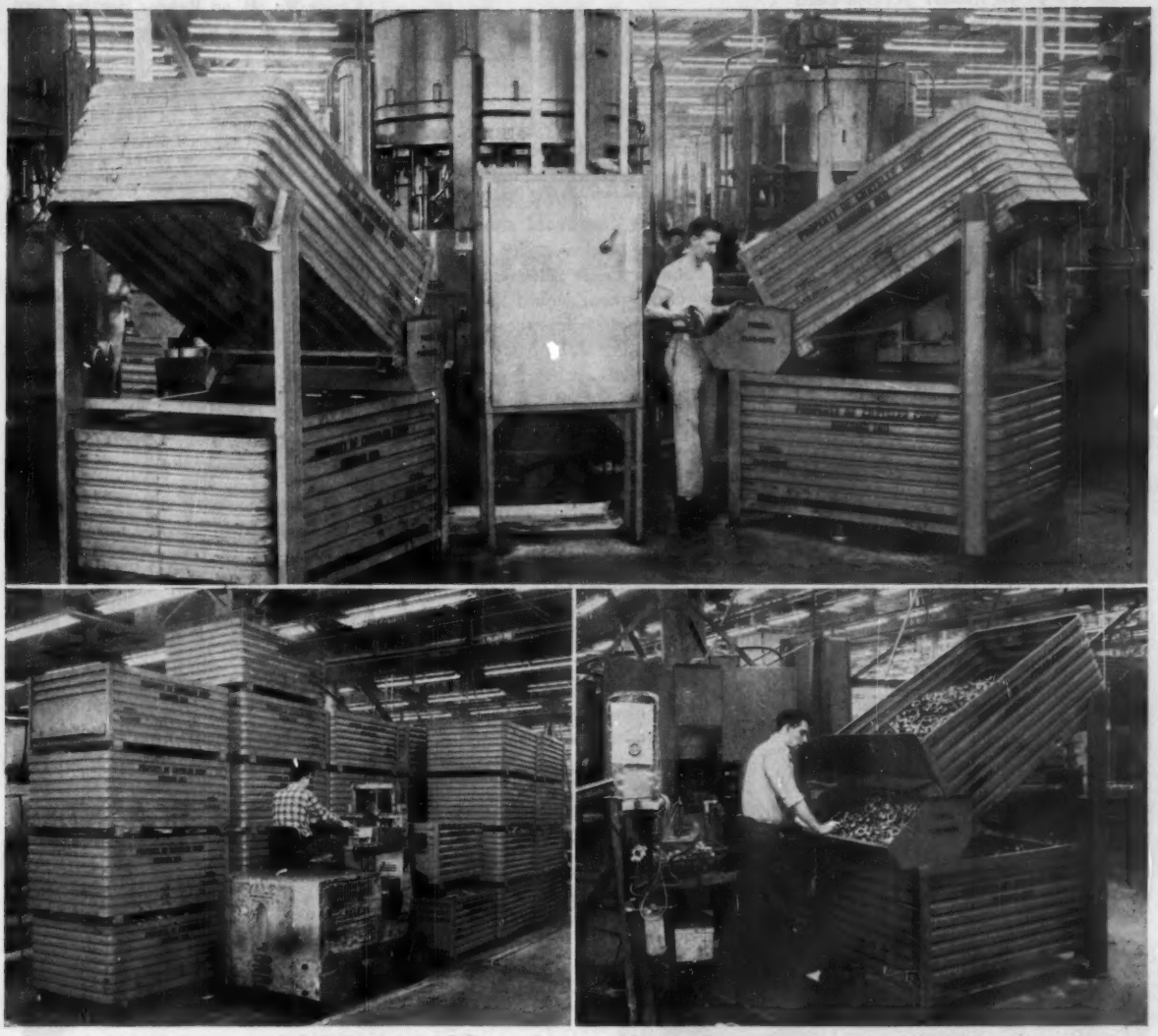
Summary

Equation 4 is first used to find the acceleration, *a*. If its value is found to be positive (plus sign) it may then be used in Equation 8. If the value of *a* turns out to be negative (minus sign), then the material will not be discharged but instead will slide back down the belt.

Equation 8 is next used to find the *x* distance. When *x* is found to be *less* than *L*, 10 or 10*a* is to be used to find the percent of ideal capacity, *C*. When *x* is found to be *greater* than *L*, Equation 11 or 11*a* is to be used.

Equations 10, 10*a*, and 11*a* may also be used when conditions have been determined by tests or by other known data to establish useful practical values of the friction factor, *f*.

Equations 21 and 22 are useful in providing a criterion of maximum belt speed. The practical limit of speed of commercial conveyors is, of course, considerably below the maximum speed to allow a margin to prevent undesirable,



Photos through courtesy of Chrysler Corporation.

Preconceived Mass Handling is possible when a manufacturer designs and builds a plant from the ground up. That's what the Chrysler Corporation did at Kokomo, Indiana. The entire plant was constructed to meet the requirements of a specific operation in the most modern and efficient manner possible. They selected the **Powell Flowmatic*** materials handling system . . . by far the most economical and fastest operating mass handling equipment available today. Literature upon request.

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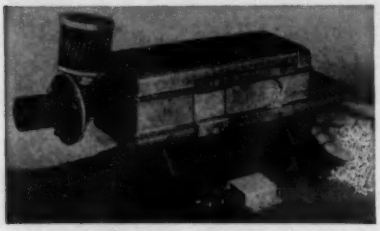

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When leaded gasoline* is used in fork lift trucks and other equipment, dangerous carbon monoxide, hydrocarbons, exhaust fumes and odors can now be safely controlled with the new Oxy-Muffler, another member of the famous Oxy-Catalyst family of catalytic exhaust purifiers.

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INCLINATION ANGLES

Continued

high discharge trajectories, centrifugal and other dynamic effects.

In general, good design of smooth belt conveyors should require them to deliver at least 95 percent of their ideal capacity. This requirement would automatically be met whenever x/L is made less than 0.05. So if we set $x/L = S^2/2aL = .05$ then a suitable belt speed for 95 percent discharge would be:

Equation 24: $S = \sqrt{0.1aL}$

To illustrate how initial velocity given to the material in the direction of the moving belt improves the discharge capacity, consider the example given in the table 1 for coal fines at 19° angle; belt speed $S = 5$ ft. per sec.; and length $L = 20$ ft. In the table the initial velocity V_1 is zero. Now let the initial velocity $V_1 = 3$ ft. per sec. Putting this value into Equation 10 results in C = 89% discharge capacity. 89%—57% = 32% increase.

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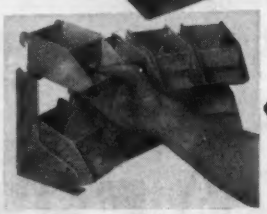

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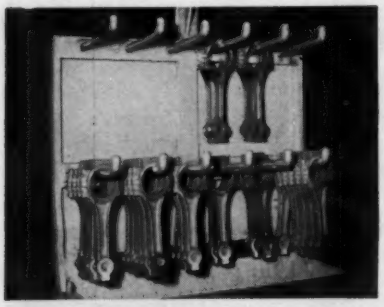

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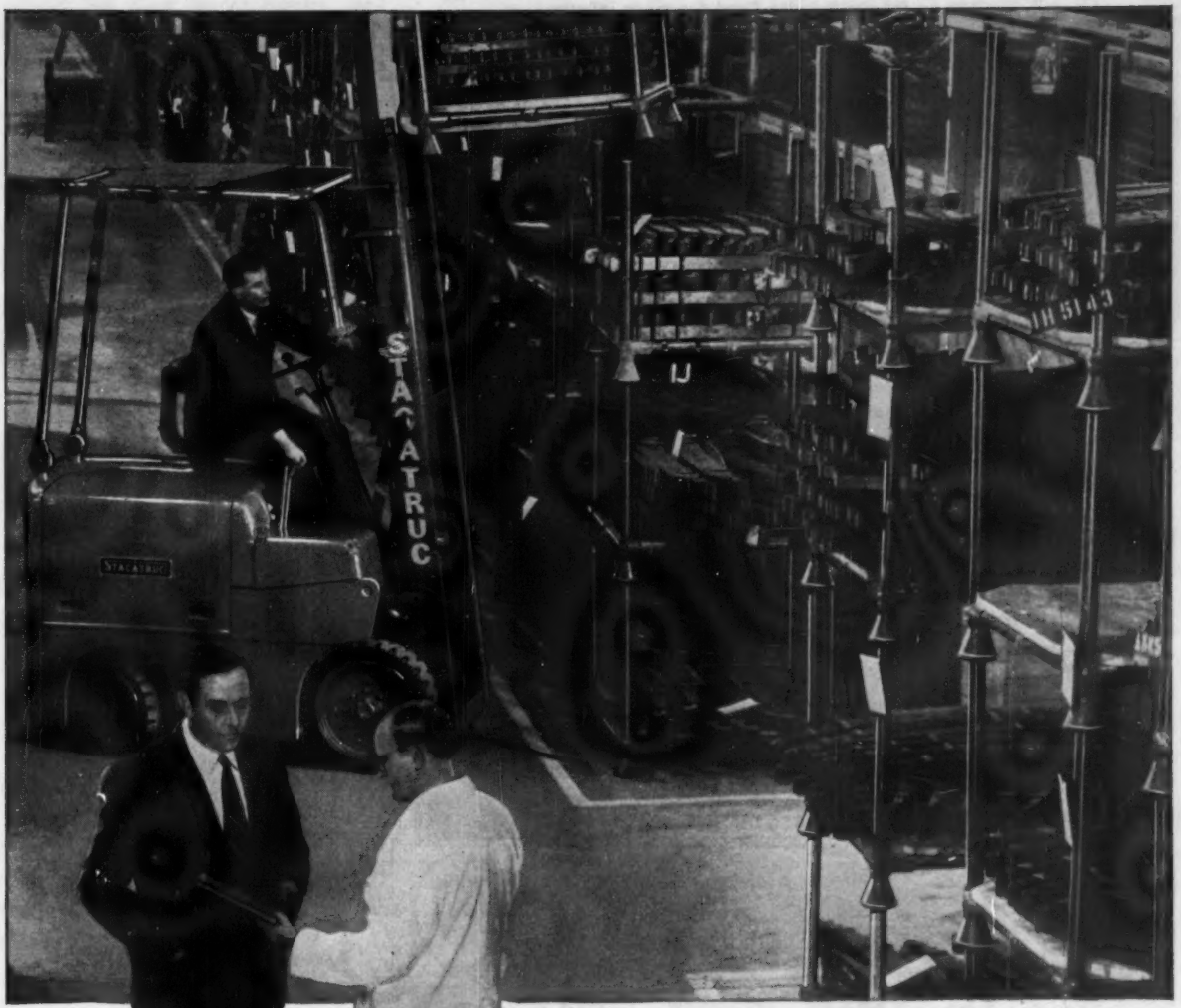

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IN ASSOCIATION WITH AUSTIN CROMPTON PARKINSON ELECTRIC VEHICLES LTD

P4731

Circle No. 68 on Reader Service Card for more information

Circle No. 117 on Reader Service Card for more information

Any Way You Figure It...
STERLINGS COST LESS PER YEAR

You want to reduce your material transport costs? You can do it easily with Sterling Wheelbarrows. They are engineered and built for the tough jobs. All steel . . . all welded . . . no rivets . . . barrows so ruggedly constructed, they seem to last forever. The unusually long service life of Sterling Wheelbarrows protects your initial investment. And maintenance costs are almost nil. Compared to other barrows, Sterlings actually cost less per year. Get the facts.
Write for catalog.

•
IMMEDIATE SHIPMENT
•

DEALERS: Ask about our liberal dealer selling plan.

Costs Less per Year

Look for this Mark of STERLING Quality

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Sterling WHEELBARROWS

WRIGHT-HIBBARD TRUCKS
available in **all** models

"WALK ALONG" POWER TRUCK

WRIGHT-HIBBARD
TRUCKS
a dependable name of world-wide fame
now precision built by
BOWERS
INDUSTRIAL ELECTRIC TRUCK CO.
Offices: Reading, Pa. • Plant: Hamburg, Pa.

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The **BECO**

Super Lift
LEVER DOLLY

- Why Pay More!
- Guaranteed
- Stronger
- Safer

- For immediate shipment, wire phone, or pin this ad to your letterhead and mail to:

BECO - Bettendorf, Iowa

Four Models ● Metal or Rubber Wheels

Circle No. 162 on Reader Service Card

COST ACCOUNTING . . .

(*Continued from page* 109)

groups with common bases, the control of each group becomes easier. You have set up a yardstick by which to measure the efficiencies of your various cost control centers.

In the shipping department, after having once determined a standard Cwt. cost, the cost analysis of this department becomes a simple mathematical computation. Any tendency or trend for this cost factor to stray from standard can be immediately detected. Remedial correction can be put into effect at once.

Monthly Schedule

A monthly schedule, similar to Schedule I, will indicate the monthly cost per hundredweight and the year-to-date cost. Comparison of actual and standard cost will answer your questions concerning efficiency or inefficiency.

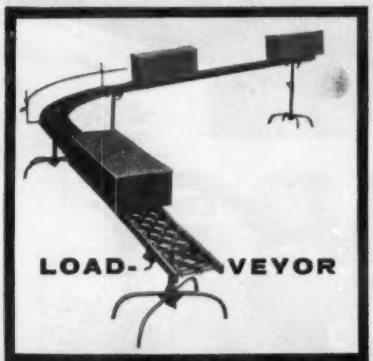
The monthly schedule indicates to management everything it desires to know concerning the shipping department, including:

1. Current and year-to-date cost for each expense account
2. Total shipping department expense for the month and year-to-date
3. The trend of the expenses
4. A comparison between standard and actual departmental cost
5. The total weight shipped in each major product line. (In distributing shipping department expenses to the various product lines on the income statement, it is only necessary to extend the actual cost by the weight shipped in each line. This will result in the proper distribution of the expense.)

An enlightened management is increasingly desirous of learning which product line is profitable and to what extent. When all other cost factors can be properly

(Continued on next page)

Circle No. 8 on Reader Service Card



GO with a glide

on the lightest-weight steel conveyor available—the sturdy American LOAD-VEYOR. This portable conveyor has exclusive zig zag grids that support both sides of each ball-bearing wheel. Narrow packages ride smoothly between the side rails, or the conveyor sections can be inverted to handle overhanging loads.

LOAD-VEYOR, industry's Magic Carpet, is the most versatile, durable, and economical sectionalized conveyor you can buy. See it at your local distributor.

A product of

The American Pulley Company
MATERIALS-HANDLING DIVISION
4290 Wissahickon Ave. • Phila. 29, Pa.

distributed to product lines, this method allows the correct distribution of the shipping department expenses.

What to do With Receiving Costs

In many factories, the shipping and receiving departments are both housed under one roof, using the same employees for both functions. The question may arise as to how to handle incoming shipments. A simple answer is—"Ignore them."

All materials that come into the plant eventually culminate in a finished product. This finished product is then shipped out. If we apply the cost factor to all outgoing shipments *only*, the result will be the same as if we attempted to break down the cost factor between receiving and shipping.

Once, again, it should be pointed out that the more we can delete our overall expenses into groups with common bases, the easier becomes the problem of applying these expenses to the product.

Circle No. 20 on Reader Service Card

LOW COST STORAGE
shipping and handling

use...
COLLAPSIBLE
TIGHT-CORNER
PALLET BOXES

ENGINEERED BY BG

- Economical
- Safe and Neat
- More Convenient
- Quickly Assembled
- Handles up to 5000 lbs.
- Collapsible When Not in Use
- Specially Made For Your Needs

30 Years Material Handling Experience
MILLS: ARKANSAS GEORGIA WISCONSIN MINNESOTA KENTUCKY

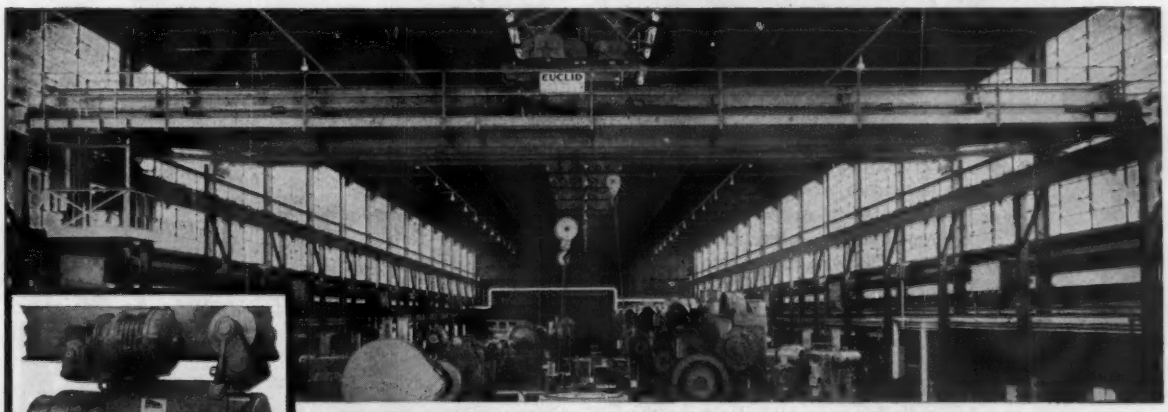
always check BG General Office and Laboratory

Write for complete details and prices to...
BIGELOW-GARVEY lumber company
226 W. HURON STREET • CHICAGO 10, ILLINOIS

that "NEEDED LIFT" can come from EUCLID CRANES & HOISTS TO "RAISE PROFITS"

You name the job or jobs to be done! We'll supply a crane or cranes that will do it. Standard Models in a wide range of styles, sizes and capacities will generally meet your requirements. If not, we'll engineer and build what you need. We've been doing it for more than 40 years.

GET A EUCLID PROPOSAL



In Capacities from 2000 to 50,000 lbs. EUCLID SERIES H HOISTS

EUCLID HOISTS are highly efficient and strictly modern in every detail with oversize anti-friction bearings and heat treated steel parts in combination with a welded frame.

The planetary gearing and mechanical load brake are mounted in oil tight housings. The hoist gearing is assembled in the hoist drum.

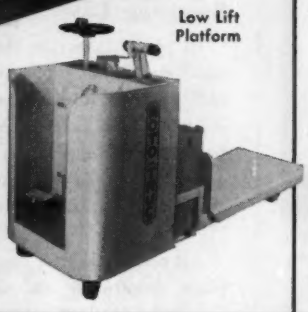
This design produces an unusual compact, rugged and accessible hoist readily adapted to various installations and types of control.

for Details & Catalog, write THE EUCLID CRANE & HOIST COMPANY
1362 CHARDON ROAD • CLEVELAND 17, OHIO

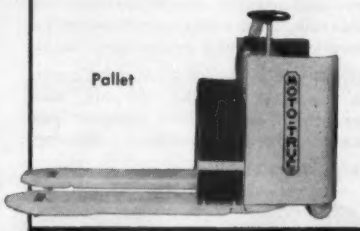
Circle No. 53 on Reader Service Card for more information

MOTO-TRUC

Builds Riding Models Too!



Originators of the "Walkie" truck also offer a complete line of "Ride-a-man" models.



Do you need an industrial truck that combines the speed and convenience of a rider type with the lower cost and maneuverability of a "walkie"? Then Moto-Truc "Ride-A-Man" electrics are your answer. They are light weight and small, yet packed with plenty of power for a full eight hours operation on most jobs. No need to sacrifice quality or dependability either. Moto-Truc skill gives you features like these —

- **Powerful Drive** — heavy duty, 18 volt motor with chain first reduction, spur gear second reduction drive unit.
- **Direct Acting Brake** — automotive type brake mounted directly on the drive wheel is operated by foot pedal.
- **Responsive Controls** — convenient roller grip control, designed by Moto-Truc, is easy to operate and simple to maintain.
- **Easy to Service** — completely accessible for quick easy maintenance.

Although built to operate in narrow aisles and congested areas, "Ride-A-Man" trucks give the operator a break too . . . plenty of standing room . . . outstanding all around vision make them safe and comfortable to operate all day long.

If your job calls for a small rider type truck — compare values and you'll always buy Moto-Truc.

Get All The Details

Write for either, or both, of these brand new catalogs —

56-R "RIDE-A-MAN" MODELS

56-W "WALKIE" MODELS

Largest exclusive manufacturers of "Walkies" and Ride-A-Man Trucks

MOTO-TRUC

The MOTO-TRUC Co.

Representatives in Principal Cities

1955 E. 59th St. Cleveland 3, Ohio

Pallet . . . Platform . . . Hi-Lift Truck

Circle No. 90 on Reader Service Card for more information

New EQUIPMENT SECTION

10,000 Pound Lift Truck For Heavy Work

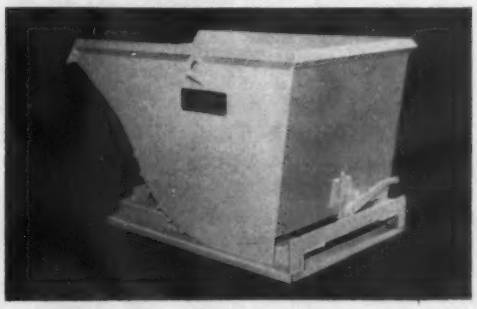
A 10,000 pound capacity lift truck, designed for heavy-duty work characteristic of steel mills, factories, warehouses, stevedoring, and any other place where heavy loads have to be handled; is being produced by Allis-Chalmers Manufacturing Company. Diesel, gasoline or LP-gas models are available. According to the manufacturer, a roller type "extra lift" mast gives more lift without increasing the overall lowered height of the unit. The mounting carriage permits the use of a wide range of standard attachments, plus specials for specific requirements. Power shift transmission, power steering, and No-Spin differential are available as optional equipment. Operator comfort, safety and convenience are design features.

Circle 259 on Reader Service Card

Locking, Self-Dumping Hoppers

Self-dumping hoppers, engineered for industrial truck handling of wet or dry, cold or hot bulk materials, have been developed by the Apex Welding & Fabricating Corporation. The hoppers may be automatically dumped by releasing a specially designed gravity cam latch at the rear of the hopper. After the load is dumped, the hopper rights itself and returns, locking positively and smoothly in the closed position. It cannot disengage again until tripped by the operator. For storage of materials, or when not in use, the hoppers may be stacked. Five models are available with ½-yd., ¾-yd., 1-yd., 1½-yd., and 2-yd. capacities.

Circle 260 on Reader Service Card



Cuts Staple Reloading

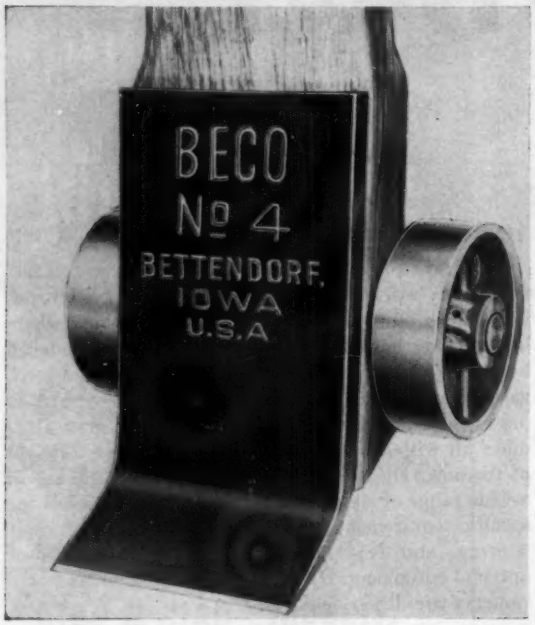
More than 5000 staple-nails can be driven with one loading by a narrow-crown pneumatic staple-nailer recently introduced by Swingline Industrial Corp. As a result, the tool is said to provide substantial production increases by eliminating a large part of the loading time normally required. Two models are available. Model 32 provides a light staple, and model 52 is for heavy-duty applications. Staple-nails are available with chisel, divergent or special point styles. They are formed in unbreakable, flexible belts.

Circle 261 on Reader Service Card

NEW EQUIPMENT SECTION

Streamlined Lever Dolly

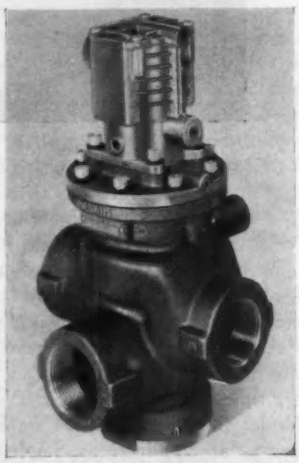
Three-thousand to over five-thousand pounds loads can be handled with a type of streamlined lever dolly



designed by Bakery Equipment Company. It features a wheel-axle lock, which eliminates projecting axles and cotter-pins; tough nose plates and Permaset bolts that do not work loose or drop out.

Circle 262 on Reader Service Card

Valves for High Speed Applications



Valvair Corporation has developed a series of high flow capacity instant-action poppet-type control valves, designed for use on large brake, clutch and other devices, especially on high speed applications. They are offered with integral pilots or for remote pilot operation, in both 2 and 3-way types, NO or NC. Working pressures range from 10 to 200 psi; in 1, 1¼ and 1½ inch NPT sizes. Solenoid pilot coils for ac or dc, any voltage, are available. The valves are also offered in ¼ to 1 inch NPT sizes, with standard Speed King solenoid pilots, built to JIC standards.

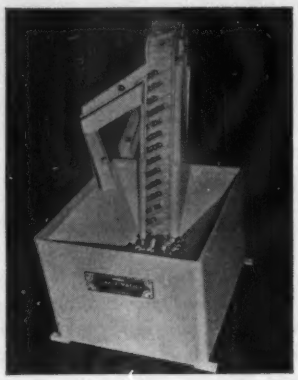
Circle 263 on Reader Service Card

Industrial Tractor Features Speeds to 10 mph

An industrial tractor, designed for towing of interplant trailer trains and for the gathering of warehouse orders, has been introduced by Hyster Company. The air-cooled engine provides 8.1 hp at 3000 rpm and has fully automatic drive. A centrifugal clutch plus fully automatic transmission with an infinite series of ratios provides smooth power flow under all conditions. Travel speeds range up to 10 mph. It has an overall length of 61¼" and width of 37¾".

Circle 264 on Reader Service Card

Feeding Device Elevates Parts From Hopper



A combination feeding unit that will handle parts that roll or slide, such as gears, cylinders and spiders, etc., has been developed by Gear-O-Mation Division, Michigan Tool Company. Although the equipment is custom-tailored to a specific job, it is assembled from standard components. They are adaptable to any part feeding job, especially for feeding parts to individual machines. In operation, parts are conveyor fed or truck dumped into the hopper section of the unit. From there, they are scooped onto slanted shelves for elevating and feeding to a distribution system. When elevated, properly positioned parts roll through—improperly positioned parts are chuted again to the hopper as they fall free on the back side.

Circle 265 on Reader Service Card

Electric Tailgate Is Push Button Controlled

One man can lift up to 600 pounds in 15 seconds by simply touching a button with the electric Jiffy-Lift introduced by Mid West Body & Manufacturing. Similar to the firm's manually operated model, the unit is

geared to eliminate battery drag. The motor is reversible, and has a built-in brake to eliminate coasting. There are no hydraulic pumps or cylinders. All moving parts move freely on ball bearings, to insure long life with minimum maintenance. The entire unit weighs only 225 pounds. It is said to be operable within your vehicle's present license fee.

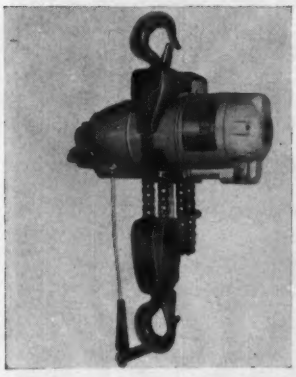
Circle 266 on Reader Service Card

"Clutter-Free" Mobile Radio

A combination talk-hear-control unit which takes the "desk clutter" out of mobile radio base station installations has been developed by the Radio Corporation of America. Made possible by transistors and miniaturized components, the unit, known as "Minitrol," combines, in a single compact case, microphone, speaker, and controls necessary for station operation of two-way radio systems. The unit can be mounted on an adjustable arm over the dispatcher's desk; can be pre-set for hands-free operation; and provides a foot switch for transmitter operation.

Circle 267 on Reader Service Card

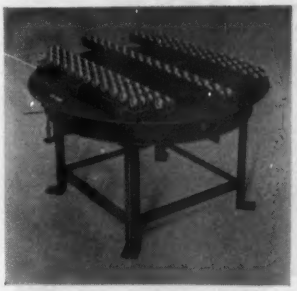
Air-Powered Hoist Features Speeds To 10 Feet Per Minute



A 4000-pound capacity hoist has been added to the line of air-powered hoists made by Gardner-Denver Company's Keller Tool Division. Fitted with either roller or link chain, the lifting and lowering speed varies from a creep to 10 feet per minute at full load and 90 psig air line pressure. Length of lift is 8 feet and the hoist operates with either one hand control bar or remote pendent control. When the air supply fails or maximum lowering speed is exceeded, the brake permits the operator to retain control of the hoist while lowering the load. It weighs 100 pounds, is equipped with swivel-mounted safety suspension and load hooks. Hook-to-hook dimension is 23½ inches. Accessories for hoist include trolleys for the hoist and air hose, a chain basket with a 20-foot capacity, filter-regulator-lubricator and a non-sparking kit to adapt the hoist for operation in explosive atmospheres.

Circle 268 on Reader Service Card

Turn Table for Handling Skids and Platforms



A type of turn table, designed for use in handling various width skids and platforms and turning them at various angles in a conveyor line, has been developed by Sage Equipment Company. It is equipped with Sage Wheelrails that may be moved apart or brought together by merely loosening and tightening the adjusting nuts. The table is 40″ in diameter and is 36″ high. There is a manually operated spring-loaded stop at 90° points.

Circle 269 on Reader Service Card

Adjustable Storage Shelves

For storage areas that vary shelving requirements frequently, Republic Steel Corporation's Berger Division has introduced "Flexi-Bilt" shelf units that can be readjusted quickly, without using tools, bolts or clamps. A sturdy steel lug at each corner of the adjustable shelves is the secret of the unit's flexibility. When a shelf is slipped into place, the lugs lock themselves into slots on the uprights and the back of the case. The shelf is removed by raising it slightly and pulling forward. For maximum adjustment of shelf height, slots for the lugs are spaced 1-½ inches apart. Boltless dividers also supplied fit into slots spaced 1 inch apart on the shelves to form bins of required widths. Cases measure 84 inches high, 36-½ inches wide and 12-½ inches deep.

Circle 270 on Reader Service Card

Magnesium Ramp for Truck Docks

A portable, magnesium ramp, to speed up truck loading and unloading operations, has been introduced by Penco Engineering Company. It features all-welded construction of light-weight magnesium. Available in capacities from 1000 to 5000 pounds, it accommodates trucks

Circle 22 on Reader Service Card for more information

BRONCO MAGNESIUM

Bridge Ramps

Quality Built Economy Priced

Here's the right answer to every truck or car loading problem . . . Bronco Bridge Ramps. Quality constructed, Bronco's exclusive design gives you greater strength, longer service and added safety features. Find out about all the Bronco features today...you'll be surprised at how economically they are priced.

- Low initial cost . . . lifetime service
- Maximum strength . . . minimum weight
- Safety tread surface . . . positive locking device
- Side guards . . . designed to prevent run-off or tire damage
- Carloading or Truck ramps . . . 1000 to 12,000 lb. capacities

Write For Illustrated Brochure

BRONCO PRODUCTS COMPANY
717 Stanford Avenue • Los Angeles 21, California

TIME RECORDER + TOTALIZER

automatic, continuous, operating data can be the difference between Profit and Loss!

Modern plant operation demands the most efficient and accurate means of evaluating both machine and man-power production . . . that's why leading companies everywhere are equipping their production lines, processes, systems and office machines with Time Recorder-Totalizers.

The Time Recorder-Totalizer monitors the operation of any machine, process or system by chronologically recording the time and duration of every "on" and "off" period during each day.

The Time Recorder-Totalizer makes it possible to analyze the efficiency and performance of any type of equipment plus simplifying cost accounting.

The TIME RECORDER-TOTALIZER incorporates the following features:

SPROCKET DRIVEN CHART . . . accurately timed . . . chronologically printed . . . available in speeds from one inch per hour to ten inches per minute . . . 250 linear feet per roll . . . each $1.25.

ELAPSED TIME METER . . . (Time Totalizer) registers accumulated "on" or production time.

AUTOMATIC REWIND ATTACHMENT with housing . . . facilitates inspection of strip chart during any period throughout the entire roll. (available for all models . . . $7.50 extra)

RUGGED CONSTRUCTION assures long carefree operation.

For complete information write to: Dept. F-R1-7

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657 BROADWAY, NEW YORK 12, N. Y.

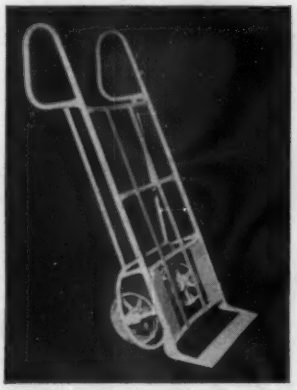
Mfrs. of: Heat-Timer Electronic Controls, Heat Recorder-Totalizer, Varivalve, Thermovalve, Main Line Quick-Vent Valve, Motorized Valves, Smoke-Eye Smoke Alarm, Fire-Chief Fire Alarm, H-T Burner Alarm.

Circle 170 on Reader Service Card for more information

either higher or lower than dock level. One man can quickly position it and a ramp stop holds it securely in place. Beveled edges and side rails are safety features.

Circle 271 on Reader Service Card

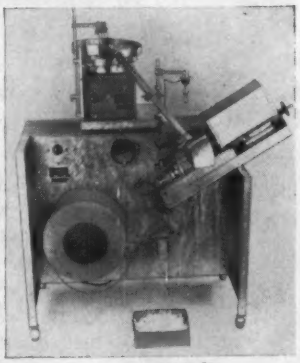
2000-Pound Capacity Hand Truck



A dock and general freight hand truck with a load capacity of 2000 pounds is available from the Tubar Truck Division of Uhrden, Inc. The truck stands 54 inches high with a 22-inch all-welded tubular steel frame and a heavy 3/8-inch high carbon steel toe plate. Ten-inch rubber tires molded on roller bearing wheels are mounted on a one-inch axle. Curved handles allow the hands to follow the curve of the handles without shifting position in "breaking" the load while pulling or pushing.

Circle 272 on Reader Service Card

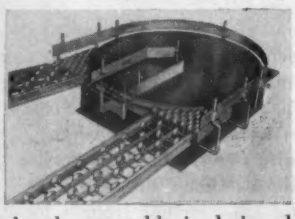
Tube Inserting Machine



The Chase Equipment Corp. has developed an automatic tube inserting machine. The unit cuts off correct lengths of plastic tubing and inserts them firmly into aerosol valves and flat or nasal plugs at production line rates up to 140 per minute. Caps are fed to the tube insert station from a hopper, which is also equipped to position for proper delivery, reject defects, and to count.

Circle 273 on Reader Service Card

Powered Turntable with Adjustable Legs



A powered turntable designed for use with powered or gravity conveyors has been developed by Samuel Olson Mfg. Company, Inc. Available with adjustable legs to bring the top to any practical height, the turntable is designed

to transfer packages or loads at either a 90 or 180 degree turn. The 48 inch diameter disc is direct-driven by a gearmotor at 25 RPM to produce approximately 300 FPM rotation. The disc is solidly supported by four rubber-tired ball bearing wheels which insure an even top surface under heavy loads. Adjustable height outer and inner guards permit the turntable to handle packages of varied heights. It requires approximately 5 feet by 5 feet of floor space.

Circle 274 for more information

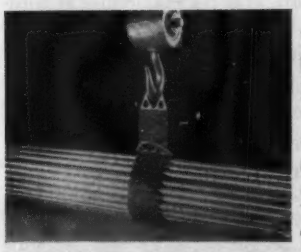
Wire Rope Sling with 72-Ton Capacity

Giant wire rope slings, 3 inches in diameter and furnished with Duroc Ending, have been perfected and introduced by the Wire Rope Divisions, American Chain & Cable Company, Inc. The manufacturer rec-

ommends its use for moving heavy power generating, industrial, marine and railroad transportation equipment. The slings breaking strength is rated at 720,000 pounds with a safe working load of 144,000 pounds or 72 tons. The sling assembly is proof tested to 288,000 pounds, double the safe working load, at the manufacturer's plant with their new 300 ton capacity horizontal hydraulic testing unit.

Circle 275 for more information

Sling Handle Provides Positive Gripping



A type of handle for woven wire slings that provides positive gripping action and easy identification as to the size and capacity of the sling, has been developed by Cambridge Wire Cloth Company. The design consists of a specially machined and drop forged handle that is mechanically fastened to the fabric by means of a stainless steel spiral, eliminating the need for welding the fabric to the handle. The handle is exactly the same thickness as the fabric, and according to the manufacturer, it is 40% lighter in weight than the old style handle. The better grip which the handle gives the sling when used in a choke hitch, results

Heavy-Duty Workhorse of Materials Handling...

PHIL-BOX

The perfect answer for transporting and storing heavy castings, forgings, strip coils, and other parts and bulk materials. The box is 10 gage steel, legs are made of ¼ in. steel plate, and the capacity is 5000 lb.

Erected or collapsed in 20 seconds, boxes may be stacked four-high when full. Special leg design assures stability in stacking, and prevents spreading of sides. Smooth rolled edges and safety lock with safety catch.

Illustrations show how easily the box is erected, collapsed, and stacked. Four collapsed boxes stack in same space as one open box. Collapsed boxes save space on return shipments and in storage. Write for literature.

SALEM-BROSIUS, INC.

13 Arch Street • Carnegie, Pa.

PHILLIPS MATERIALS-HANDLING EQUIPMENT

Manufacturers Since 1863

Circle 110 on Reader Service Card for more information

Circle 21 on Reader Service Card for more information

DEPENDABLE MATERIALS HANDLING EQUIPMENT

...built by Bond

1A Series Rigid Caster—sizes: 2 to 9 in. dia.

36A Series Double Ball Race Swivel Caster—sizes: 4 to 12 in. dia.

40A Series Structural Steel Swivel Caster—sizes: 4 to 10 in. dia. (companion types to 12 in. dia.).

All Bond Casters are available with metal or floor protective wheels—plain or roller bearing.

41A Series Structural Steel Rigid Caster—sizes: 4 to 10 in. dia. (companion types to 12 in. dia.).

Universal Lift Jack and Platform

50A Series Single Ball Race Pressed Steel Swivel Caster—sizes: 2 to 6 in. dia.

Buy *dependable* Bond materials handling equipment from your distributor. Write for Bond Catalog K-40.

Bond Foundry & Machine Co.
MANHEIM, PENNA.

ALL-NEW!
50TH ANNIVERSARY
"DETROITER" ELECTRIC HOIST

STREAMLINED... everything built-in, enclosed, protected; no HUNG-ON parts; modern in every detail.

SUSPENSION... various types available, including power travel.

HOOK STOPS... automatic up-stop, automatic down-stop; one of the several safety features included on the Detroiter.

PUSH BUTTON CONTROL... low voltage, pilot circuit.

The Detroiter can also be furnished for AIR MOTOR operation in place of electric motor.

A BALANCED DESIGN—RUGGED, SMOOTH, QUIET, ACCESSIBLE

Inquire about the "Detroiter"—all new Electric Hoist; get further information, phone or write today. Ask for Bulletin 850

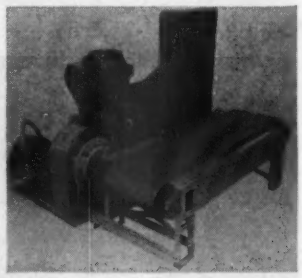
DETROIT HOIST and MACHINE CO.
8264 MORROW STREET • DETROIT 11, MICHIGAN

Circle 46 on Reader Service Card for more information

from reducing the shank of the female handle to a two inch width, thereby increasing the fabric area on any given length of sling. To assure positive sling identification, and eliminate the use of metal tags, information as to the size and capacity of the sling itself is now forged into the handle.

Circle 276 on Reader Service Card

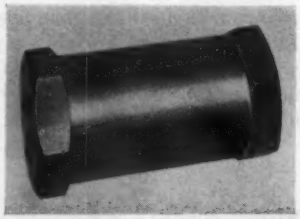
Non-Stop Production Assured By Belt Conveyor



Non-stop production and automatic coordination of a vibrating bag packer with a sewing machine are provided by a jack belt conveyor developed by Richardson Scale Company. The conveyor is located beneath an automatic scale with the sewing machine conveyor position in line with it. At the completion of bag packing, the jack belt starts up. The bag travels to the sewing machine conveyor and on the sewing machine station. The conveyor has a center distance of 3½ feet between pulleys permitting close placement of sewing machine to scale. Belt speed is 75 feet per minute.

Circle 277 on Reader Service Card

Lightweight Check Valve



An aluminum check valve—weighing four ounces—has been developed by Ross Operating Valve Company. Available in two models, ½ inch and ⅜ inch pipe size, the check valve has a differential cracking pressure of 1 psi maximum. It withstands pressures up to 125 psig and temperatures up to 175 degrees Farenheit.

Circle 278 on Reader Service Card

Counter Assemblies To Sort and Count

A wide variety of custom made assemblies of small counters are avaliable from The Denominator Company. They are ideal for use in all manner of sort and count problems. In the processing of orders—each order for each kind of product can

be tabulated from the original order sheet merely by tapping the cover key of the proper counter, each counter being designated for a particular product. Large numeral dials enable instant summary readings. All counters in any one horizontal row can be simultaneously reset to zero by one revolution of the reset knob. According to the manufacturer, payroll denomination, order sort for inventory control, preparation of truck load sheets, analysis of production waste reports, and other office functions can be performed by these counters.

Circle 279 on Reader Service Card

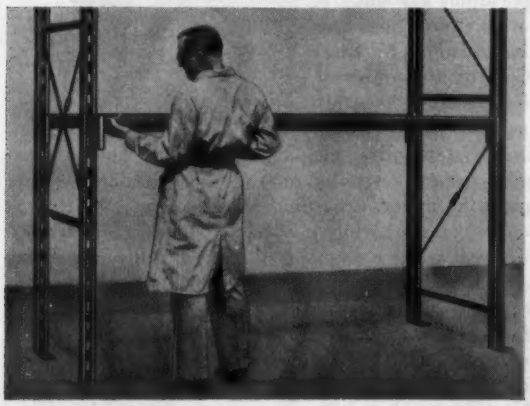
Film Holds Moisture, Oils, Odors

A 1 mil heat-sealable polyester film has been introduced by Minnesota Mining and Manufacturing Co. It was developed for light packaging jobs where moisture, oil or odor retention is required. The film, Scotchpak brand film No. 10A3, is a bright, clear film that is heat-sealable on one side. It has a tensile strength of 10,000 psi, with a burst strength of 32 psi. Elongation is 200 percent at break. The film can be laminated to paper without heat damage to paper fibers. It can be written on with wax or marking pencil and is easily cleaned. It retains its properties from —70 to above 230 degrees F. It is presently available in widths up to 19 inches and roll lengths up to 1500 yards.

Circle 280 on Reader Service Card

Storage Racks Adjustable Without Bolts

A type of storage rack which is completely adjustable without bolting or unbolting is being manufactured by American Metal Products Company. The



method used for adjusting is described as "Slide-n-lock". The stringers are quickly moved up or down a special formed post and lock themselves in place. Over 800 different sizes and capacity variations can be made from five basic parts which are carried in dis-

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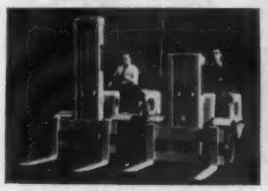

For 144" lift; conventional mast (left) has down height of 92" vs. only 72" for Multi-Lift mast (right). For 120" lift, conventional mast has down height of 83" vs. 62" for Multi-Lift.

Write today for your copy of the folder describing the revolutionary new Multi-Lift mast.

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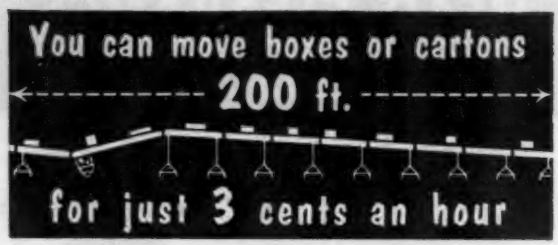

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tributors' warehouses for immediate delivery. According to the manufacturer, there is no bolting or welding in the erection of the rack.

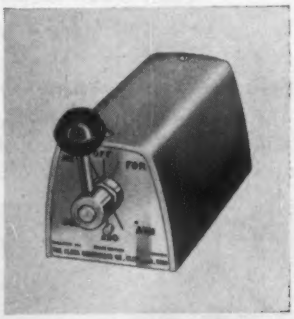
Circle 281 on Reader Service Card

Floor Scale Equipped with Shock Absorber

A fully automatic floor scale featuring an easy-to-read cumulative dial has been developed by The Powerad Company. As the pointer rotates, it causes totals to appear in six small windows spaced around the dial. Thus the first time the pointer passes the first window a "ten" appears, in the next window a "twenty" and so on. The scale is equipped with a shock absorber to protect the mechanism against rough loading, and is unaffected by temperature changes. Options include front and rear dials, tare beam or rapid taring device, wheels so scale can be moved readily.

Circle 282 on Reader Service Card

Versatile Drum Switches



Three models of drum switches for reversing across-the-line starting of small conveyors, shop tools, door operators, oil burners, and other applications for small ac or dc motors have been introduced by Clark Controller Company. One model, type IR permits instant reversing of standard single-phase ac motors. Since it permits instant reversing of any small standard single phase ac motor, according to the manufacturer, it is not necessary to buy a special motor for application where it is not convenient to wait until the centrifugal switch closes before reversing. Type PR models, for conventional reversing duty, are convertible in the field between maintained-contact action and "spring return to off". The switches have butt-wipe, self-cleaning contact action, and silver alloy contacts, to assure long life with minimum contact wear and pitting. Horsepower ratings are ¼ hp for dc motors, 1 hp for 115-v single-phase ac motors, 1½ hp for 230-v single-phase ac motors, and 2 hp for 220-550-v two or three-phase ac motors.

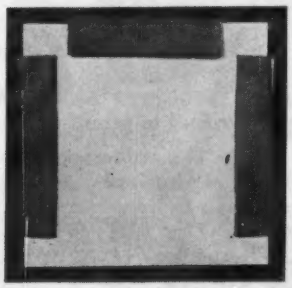
Circle 283 on Reader Service Card

Power Floor Sweeper Tows Trucks

An industrial power floor sweeper that can also be used as a tow truck for intra-plant loads has been introduced by the Industrial Sweeper Company. According to the manufacturer, it is capable of towing a wheeled load weighing up to 7 tons at a speed of 7 mph. It is equipped with a hydraulic drive, and there are no gears and no clutch. This special drive eliminates any danger from overloading, even when the sweeper is used as a tow truck. If a load is too heavy to move, a relief valve opens and the hydraulic fluid by-passes the driving mechanism.

Circle 284 on Reader Service Card

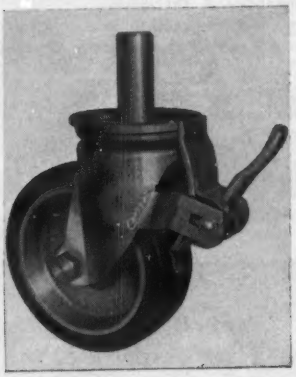
Cushioning Material Now Available In Three Different Types



Edg-Pak, a cushioning material designed to protect delicate edges, is now available in three different types. Edg-Pak is made by Flex-O-Lators, Inc. It grips and cushions edges up to ½ inch thick, through its own inner spring wire construction. This spring cushion is woven into inner padding and then covered completely with X-Crepe. This is now known as No. R-2 Regular. No. 1-N has a MIL-B-130a cover. No. 1-NP has a 2 mil polyethylene coated grease-proof cover, with MIL-B-130a cushioned X-Crepe inner liner.

Circle 285 on Reader Service Card

Dual Brake Caster for Heavy Loads



A heavy duty scaffold caster with dual brake has been developed by Faultless Caster Corporation. This caster, built for heaviest loads, is ideal for engine stands, scaffolds and general industrial use. Brake simultaneously locks both swivel and wheel, assuring absolute safety and prevents scaffold "walking". The caster is offered in a choice of hard or cushion tread, 8-inch diameter, wide face wheels for every type floor.

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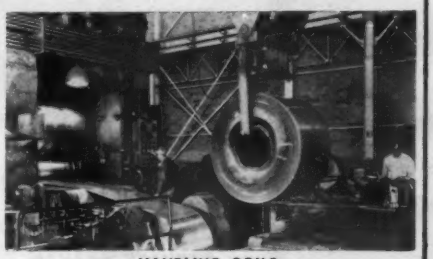
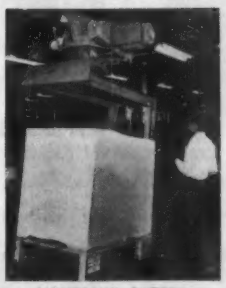
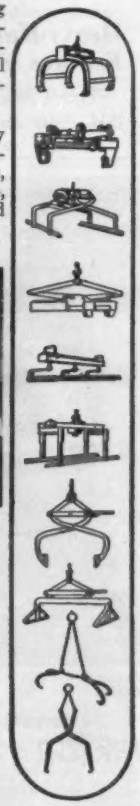


HANDLING COILS



HANDLING SHEETS



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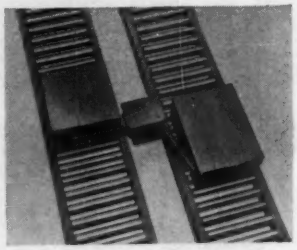
NEW EQUIPMENT SECTION

Traffic Control Device



A device for light duty applications on converging conveyor lines that eliminates jam-ups by automatically keeping material flowing from only one of two converging conveyor lines, at a time, has been developed by Harry J. Ferguson Company. The device, called the Fergo-Merger, Jr., is said to be ideal for controlling the flow of material weighing 20 lb. or less. The unit gives the right of way to the package which reaches the intersection first, holding back the other line until the first package has cleared. According to the manufacturer, it can be installed on power conveyors and it is sensitive enough for use in gravity conveyor lines if the pitch is sufficient.

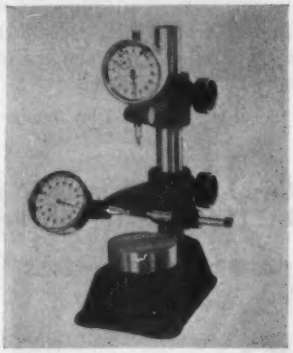
Circle 287 on Reader Service Card

Heavy-Duty Dump Bodies Feature Safety Design

Three heavy-duty "Speedlift" dump bodies, Series 804, 940 and 1040, have been introduced by Daybrook Hydraulic Division, L. A. Young Spring & Wire Corp. Construction features excavator style bodies, with "box" type side braces. They are designed for loading, hauling, and dumping large stone, boulders, broken concrete, bulky chunks of material, and similar loads requiring bodies of great strength and durability. The bodies feature special, safety design of "dirt-free" sloping running boards, tailgate horizontal bracing and bottom structural channel that prevents accumulation of dirt or stone during loading operations—thereby eliminating hazards during transit.

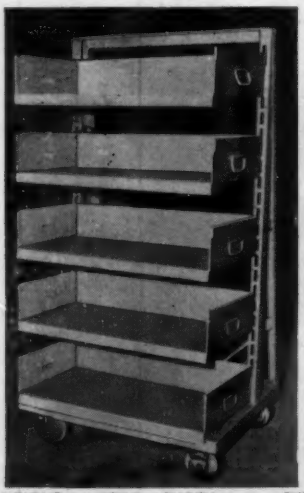
Circle 288 on Reader Service Card

Dial Bench Gage Can "Take It"



A rugged dial bench gage has been introduced by Air Transport Equipment, Inc. Two .0001" dial indicators with revolution counters are supplied. The base is hardened and ground and the column is precision ground. The yoke permits measurements to 2 inches. According to a spokesman, it is ruggedly constructed to permit rough handling.

Circle 289 on Reader Service Card



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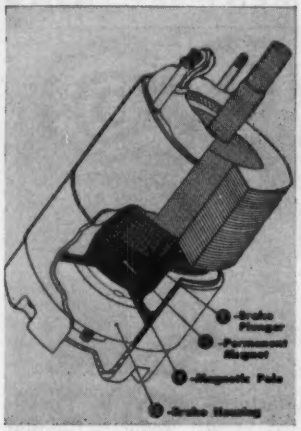
Mechanical Brake Motor



A type of mechanical brake motor has been introduced by The Cleveland Electric Motor Company. It is the third in a series and is a polyphase motor with built-in mechanical brake. It is designed for quick releasing and fast braking, and is used for precision stopping, braking overhauling loads, as a holding brake, a hoist brake and to stop motor coasting between operations. The motors are available in 1800, 1200 and 900 rpm and some slower and multispeed designs. According to the manufacturer, the simplicity of design, the elimination of coils and solenoids and proven long brake life, reduce maintenance to the vanishing point.

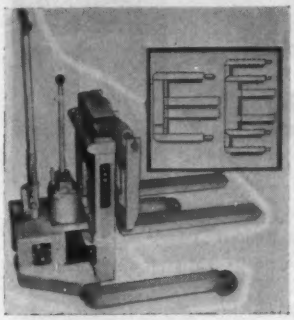
Circle 290 on Reader Service Card

Extreme Pressure Grease

A multi-purpose, non-melting grease for high and low temperatures and operations at extreme pressures has been announced by Bel-Ray Company, Inc. The manufacturer recommends the grease for all types of bearings operating under extreme loads both in water and high heat. Polylube E. P. grease contains rust and oxidation inhibitors. It is colored green for easy identification for specific plant applications.

Circle 291 on Reader Service Card

Straddle Lift Truck Accommodates Various Size Pallets And Skids



A straddle lift truck that handles various size skids, pallets and rolls, as well as machines and reels, has been introduced by Langley Manufacturing Co., Inc. Two models are available, Model 30 and 42, both of which feature forks that slide easily on polished shafts to accommodate up to 48-inch board width pallets or skids. Forks are high lifting, permitting skids, pallets or rolls to be lifted up to 14-inches off the floor. Double lifting chains on equalizing cross head enables either chain to support maximum load for maximum safety. The Multi Purpose Transporter lifts up to one ton and overcomes floor irregularities with oversize wheels, which will not trap in small depressions.

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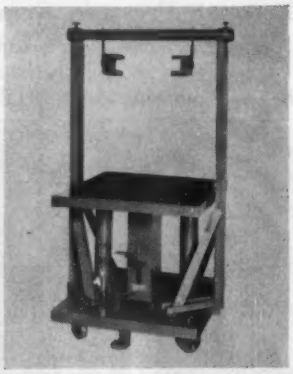
NEW EQUIPMENT SECTION

High-Speed Digger and Loader

A high-speed digging and loading machine has been developed by The Oliver Corporation. Built as a tractor-loader in one basic, compact unit with simplified trencher mounting, the unit features a 22 d.b.h.p. engine with 4-speed transmission. The manufacturer claims the low-silhouette profile design has greatly reduced pedestal height, permitting exceptional operator vision as well as gaining greater loader stability. It has four lower track wheels and deep, full-length side panels to protect against damaging rocks. Track gauge is 46 inches for maximum stability in high-speed, full-loading capacity.

Circle 293 on Reader Service Card

Demountable Die Separator



A demountable die separator for use in conjunction with lift tables has been developed by Lexco Engineering & Manufacturing Corp. It is made of heavy-duty all steel welded construction, and is quickly and easily secured and mounted to the base of the lift table by four bolts. The cross bar of rolled steel tube is equipped with two clamps which are moveable enabling adjustment to fit any width die-set. Clamps are heavy-duty steel capable of suspending 2000 lbs. The demountable die separator when mounted on the lift table has a height of 62 inches from floor to bottom of cross bar, width of 30¾ inches and table clearance of 14 inches when table is raised to its highest position. Shipped knocked-down, die clamps and mounting bolts are included.

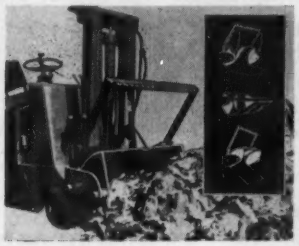
Circle 294 on Reader Service Card

Electric Turntable Rotates Heavy Loads

An electronically operated turntable, designed for industrial loading operations and to reduce operator fatigue, has been introduced by The Manufacturers Equipment Company. According to a company spokesman, the turntable is capable of rotating heavily loaded cars, pallets or racks quickly and smoothly. It is operated by push-button controls which index the turntable to any of nine stations.

Circle 295 on Reader Service Card

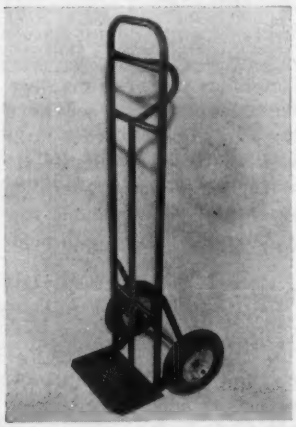
Special Clamp Scoop For Fibrous Materials



A type of clamp scoop for use on industrial fork trucks, combining special features which make it particularly efficient in speedily handling tough, fibrous and interlacing materials, is currently being manufactured by the Materials Transportation Company. The scoop is designed with no sides on the blade, with overhanging, out of the way clamp bar for effortless entry under the load at floor line. The blade is rotated by its own hydraulic cyclinder. With clamp scoop closed, holding the material by clamping action, the load is lifted by the truck hoist and transported.

Circle 296 on Reader Service Card

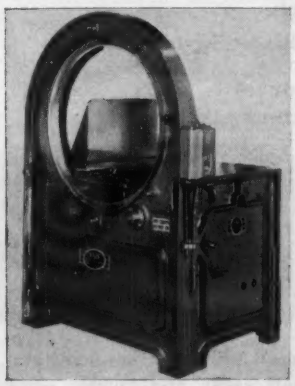
Lightweight Steel 2-Wheel Hand Truck



A lightweight 2-wheel hand truck, Model TB-21, has been added to the line of 2-wheel trucks manufactured by M-H Equipment Company. The TB-21 is designed for use by bottlers and is said to be easy rolling and light in weight (21 pounds), providing ease in handling on and off delivery trucks. It is constructed of a tubular steel frame and rides on pneumatic tires. Overall dimensions are 47 inches high, 13 inches wide, with a 7 inch nose blade.

Circle 297 on Reader Service Card

Straps Various Size Packages Without Adjustment



Packages which vary in size and shape may be strapped without any adjustments by the Model 12 Round Steel Strapping Machine, manufactured by Gerrard Steel Strapping Division of United States Steel Corporation. The machine is available in two sizes. Either will strap packages as small as 8" wide by 2" high; the larger will handle packages as large as 26" wide by

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Lifting Jobs of All Kinds

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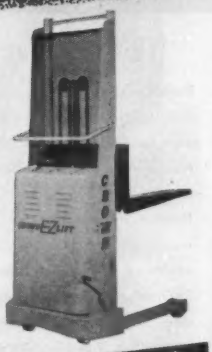


MODEL BL 1250-56—

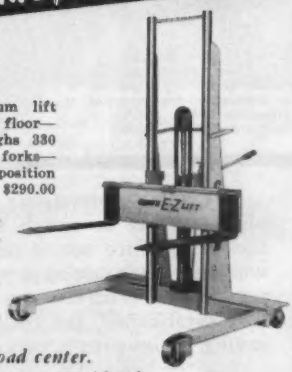
1250-lb. capacity*, battery operated hydraulic lift with dependable 12-volt electrical system including built-in battery charger. Highly maneuverable with extremely short turning radius—easily handled by one man. Automatic overload protection . . . dual foot brakes . . . maximum lift 56" above floor. Remote control available as optional feature. Price, including battery, $580.00, F.O.B. New Bremen, Ohio.

Low Cost . . . Easily Operated

MODEL LT-1000—

1,000-lb. capacity*. Extra strong tubular steel construction, safety plate platform, foot-operated brake. Maximum lift 54" above floor—lowers to 5¼" above floor—straddle capacity 16¼". Weighs only 270 pounds. Price $240.00 F.O.B. New Bremen, Ohio.

Highly Maneuverable



MODEL FL-1000—

1,000-lb. capacity*. Maximum lift 54" above floor—lowers to floor—straddle capacity 38". Weighs 330 pounds. 4" x 24" sliding forks—easily adjustable to any position from 11" to 34". Price $290.00 F.O.B. New Bremen, Ohio. Optional "Snap-On Safety Platform" for quick conversion to lift table.

Capacities rated on 20" load center.
Special lifts engineered to your specifications.

WRITE TODAY FOR DETAILS!
HYDRAULICS DIVISION
CROWN CONTROLS Co., Inc. NEW BREMEN, OHIO

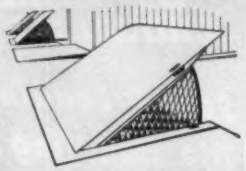
CC13

Circle 41 on Reader Service Card for more information

Circle 79 on Reader Service Card for more information

LOADING DOCK PROBLEMS?

3 easy ways to solve them —and most economically, too!



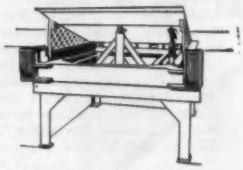
RECESSED RAMPS
Two standard, 60" x 60" and 72" x 72". Two flush-type, 72" x 72" and 96" x 72".

RITE • HITE
mechanical
loading ramps

SELF-CONTAINED RAMP
For non-permanent installations. 72" x 72".

10-ton capacity

Practically no maintenance! Rite-Hite *precision counterbalanced* design eliminates troublesome cylinders, pumps, motors, starters, piping, valves, wiring, gears, cables. Rite-Hites are not affected by dirt, debris, extreme heat or cold. Easy to install—furnished complete, no "extras" to buy. All-welded heavy steel construction. You can be *sure*, when it's a Rite-Hite, it's right. Get full details—write Dept. F-77



TRUCK-ACTUATED RAMPS
Two models, recessed and self contained, 96" x 72".

RITE-HITE DIVISION

LOOMIS MACHINE COMPANY
133 EAST FOURTH STREET, CLARE, MICHIGAN

NEW CHEM-BOARD* BINBOX IDEA SAVES INVENTORY TIME and MONEY

*Chem-Board is the product of Convoy's process for chemically impregnating corrugated board, making it flint-hard and rock-strong.

WEIGHING IS FASTER THAN COUNTING

Instead of scooping out contents of a bin to count or weigh items at inventory time, the entire box is easily pulled out and weighed. Each stored part has a known count per pound. With the tare of the Convoy Bin Box established, the result is a tremendous saving in inventory time and effort.

Convoy Boxes may be *your* answer.

GET IN TOUCH WITH

CONVOY, INC.
CANTON 6, OHIO
P. O. Station B, Box 216-F

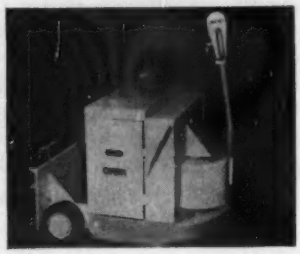
STANDARD AND CUSTOM-MADE NESTING, STACKING, and VERTICAL-SIDED CHEM-BOARD TOTE BOXES

Circle 39 on Reader Service Card for more information

20" high. Both operate at speeds up to 24 ties per minute, and can be adjusted for predetermined tensions. All functions are electro-air controlled and interlocked. Table height is 31", and only 11½" square feet of floor space is required.

Circle 298 on Reader Service Card

Tractor Has 2 Speeds in Forward and Reverse



A compact, battery-powered tractor that can be used for both pulling and pushing operations in confined areas has been added to the "Powrworker" line of hand trucks produced by the Industrial Truck Division of Clark Equipment Company. The machine has a normal draw bar pull of 200 lbs. and a breakaway rating of 700 lbs. It has two speeds in both forward and reverse and will travel two mph fully loaded and 3.2 mph empty. Fingertip control levers are placed on the steering handle. Although the tractor is designed as a "walkie" type, the operator can sit on the front cover for long runs. Two models of different lengths are available. The PT-S, for single row battery, is 39¼ inches long, less coupler. The PT-D, for double row battery, 44⅝ inches long. Overall width of both models is 32 inches.

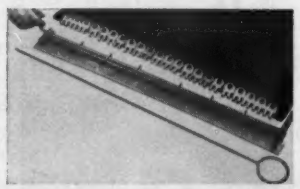
Circle 299 on Reader Service Card

Permanent-Magnet Conveyor

A magnetic unit for carrying parts along on overhead conveyors has been developed by the Magnetool Division of Multifinish Mfg. Company. Parts are placed on the magnetic tines of the unit and are securely held for conveying through such processes as cleaning, rinsing, painting, drying, etc. According to the manufacturer, it completely eliminates the need for hooks, hangers and the fabrication of special conveyor devices. The Magne-Carriers are available with 1 to 4 tines, and in varying lengths, depending on individual load requirements.

Circle 300 on Reader Service Card

Aligning Holder for Conveyor Belt Fasteners.



Flexible Steel Lacing Company, has developed an aligning holder to speed and ease the application of Flexco Hinged Conveyor Belt Fasteners. Advantages are: (1) all fasteners are kept in proper alignment while nuts are being run down (2) bolts break off easily and quickly since this aligning holder keeps all fasteners and end of

belt rigid (3) hinge pin is easily inserted because all fasteners are assembled in proper alignment (4) a No. 500 Templet is an integral part of the aligning holder so that both of these important tools can be had as one complete unit. After nuts are tightened the aligning holder is quickly removed from belt by simply turning cam pin 90° and pulling out alignment pin.

Circle 301 on Reader Service Card

Paints Lines Within Half-Inch of Any Barrier.

A marking machine which employs a Dynel paint roller has been introduced by H. C. Sweet Company. It is said to make it possible to lay safety and parking lines up to ½ inch of any barrier. The design allows the paint to feed directly onto the roller from above through multiple brass valves. The flow is controlled by operator pressure on a tripper handle. According to the manufacturer, the "Roll-On" eliminates hand-painting to finish horizontal lines which, with conventional equipment, would end short of a barrier.

Circle 302 on Reader Service Card

Guards Against Truck Accidents

Fork trucks are prevented from accidentally being driven off the edge of loading docks by a new type of magnesium curbing manufactured by Magnesium Service Company. The curbing is produced in short sections which are light enough to be handled by one man. Sections are fastened to the dock's edge without bolting, and can be quickly removed. When a car is spotted for unloading, the sections adjacent to the doors of the car are removed, and a dock board put in position.

Circle 303 on Reader Service Card

Designed for Scratch-Free Handling

Two groups of "Liftex" nylon webbing slings have been introduced by the Caldwell Company, Inc. The first group is constructed with a nylon-cored buffer strip 1¾" wide and .125" thick. It is available in reversed-eye models; in 2, 3½ and 6 inch widths. The safe working load ranges from 5000 to 13,500 pounds; safety factor is 5 to 1. Features

Circle 109 on Reader Service Card for more information

NEW...

RUGER
CONVERTIBLE
QUARTER-TONNER
Well can be moved to truck body by removing four bolts. Entire truck crane assembly weighs only 100 pounds.

LOW COST-LARGE PERFORMANCE

An extra bonus piece of equipment—this new Ruger Floor Crane converts easily to a truck crane.
Other models are available in capacities to three tons in floor cranes, two tons in truck cranes.

WRITE:
Ruger Cranes — 601 West Fourth Street, Ulrichsville, Ohio

LETS ONE LINE MOVE, STOPS THE OTHER

• Used where two sections of power, belt, live roller or chain conveyor converge, the Ultimate Traffic Cop permits one case, can, carton or box to pass on one line while the other line is stopped by the arm. When flow of material ceases, or sufficient gap occurs on line, material on other line passes.

MAIL THIS COUPON

FREE!

ISLAND EQUIPMENT CORP. Dept. F-7
27-01 Bridge Plaza North
Long Island City 1, N. Y.

Please send Bulletin TC-1 describing the ULTIMATE TRAFFIC COP.

COMPANY.....
BY.....
ADDRESS.....
CITY.....ZONE.....STATE.....

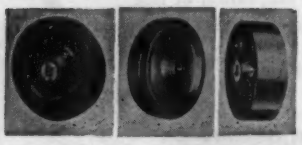
Circle 73 on Reader Service Card for more information

Hold on there! Back up a bit: you just rushed by some pretty important information. Before you pass this copy of FLOW along to the next reader, check it over once more to be sure you didn't miss anything. The handy Reader Service card on pages 35 and 36 will bring you details on any of the items shown. Just mark what you want and drop it in the mail.

Lift Jack and Semi-Live Skids-

...Make an ideal Low Cost

HANDLING SYSTEM



WHEELS

PLASTIC
RUBBER
METAL

Ironbound — **IRONBOUND**

30 Hoffman Place • Hillside, N. J.

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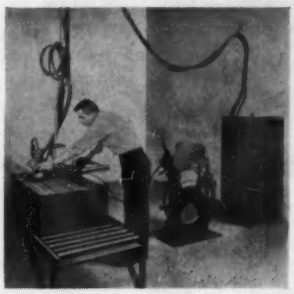
stressed by the manufacturer are (1) resistance to abrasive and cutting edges, (2) high strength and low weight, (3) fast, complete recovery from shock loads and (4) low moisture absorption. No rivets or metal are used in the construction—assuring scratch-free handling of highly-finished loads. Group two provides all of the same features as group one, except the capacity is 2,800 pounds in basket hitch and 1,050 pounds in choker hitch. Group two is available in eye-and-eye, endless and reversed eye models, the entire group is 1¾ inches wide.

Circle 304 on Reader Service Card

Eliminates Hand Strapping Operations



Safe, efficient strapping is made possible with the USS Gerrard Model 56-57 hydraulic-powered, semi-automatic stretcher sealer. According to Gerrard Steel Strapping Div., U. S. Steel Corp., the unit puts the same tension on every package, and eliminates many hand operations. Its feed-coil dispenser automatically reduces waste scrap. Push button controls are provided for both tension and return stroke. The sealer is quickly positioned for quick sealing. That too is controlled by push button. The entire unit can be converted at will from ¾ inch to 1¼ inch strap.

Circle 305 on Reader Service Card

Combines Top Unloader Features

Unloading of materials from hopper bottom, open top railroad cars is expedited by a car shaker introduced by Eastern Constructors, Inc. The Eastern Car Shaker combines the impact features found in car shakers which operate on the top edge only, with the vibration features of units which hang on the car side and are clamped to its underframe. The unit is said to be particularly effective in loosening stubborn or frozen materials and starting a rapid flow from hopper openings. It is driven by a 10-horsepower totally-enclosed motor mounted on a spring-supported base. Self-aligning bearings on the unbalanced rotating shaft insure long life.

Circle 306 on Reader Service Card

AMHS Elects Officers for '57-58

THE American Material Handling Society named William E. Kappler as president of the National association at its Annual Meeting in Cleveland, Ohio, June 22 and 23. Kappler is chief conservation engineer for North American Aviation, Inc., Los Angeles, Calif.

First vice president is Frank G. LaTour, Mohasco Industries, Inc., Amsterdam, N. Y.

Named as second vice president is Alfred J. Van Benschoten, Manhattan Rubber Div., Raybestos Manhattan, Inc., Passaic, N. J.

Therman O. Darnell, Dow Chemical Co., Madison, Ill., is treasurer. And Neil A. Bryson, Canadian Westinghouse Corporation, London, Ont., is secretary.

Kappler, the new president, has an active record with AMHS. He is a charter member of the Los Angeles chapter, and was chairman of that group in 1954-55. He is a national director of the association, and was national second vice president for 1956-57, immediately prior to his election as president.

LaTour serves his second consecutive term as first vice president. He is one of the founders and a past president of the Albany chapter of AMHS.

W. E. Kappler

He was a national director in 1951-54.

Van Benschoten was national treasurer last year, before becoming second vice president. He is a founder and past president of the New Jersey chapter.

Darnell, elected treasurer, is a former president of the St. Louis chapter and past national director.

Bryson, secretary, is a founder and past president of the Hamilton chapter. He was also a national director.

LaTour

Van Benschoten

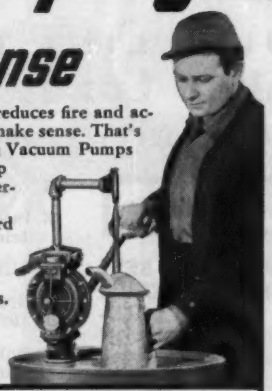
Darnell

Bryson

Pumping makes sense

Any plant improvement that reduces fire and accident hazards certainly does make sense. That's the case when Tokheim High Vacuum Pumps are put into service. They help prevent spilling, slopping, overfilling and dripping. Operate on both forward and backward strokes—deliver 20 gallons per 100 strokes. Available with hose or spout outlets and other optional attachments.

Call your dealer or Tokheim representative; write for literature and approved list of liquids.



pump many liquids

Acetates • Alcohols • Aromatic Solvents Chlorinated Solvents • Glycols • Ketones and Ethers • Petroleum Products & Solvents • Plasticizers • Water and Others.

Alternate parts for special liquids

QUALITY TOKHEIM HIGH VACUUM HAND PUMPS

UL FM

General Products Division

TOKHEIM CORPORATION

DESIGNERS AND BUILDERS OF SUPERIOR EQUIPMENT SINCE 1901

1888 Wabash Avenue Fort Wayne 1, Indiana

Subsidiaries: Tokheim N.V., Leiden, Holland—GenPro, Inc., Shelbyville, Ind.
Factory Branch: 475 Ninth Street, San Francisco 3, California
In Canada: Tokheim-Reeder of Canada, Ltd., 205 Yonge St., Toronto, Ont.

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NEW — NEW
NOW BEST BUY OF ALL!

PALLET TRUCKS

FULLY HYDRAULIC

ONLY

$350.00

(F.O.B. CHGO)

Now you can have quality at the lowest price of any hand operated, full hydraulic, fork-type Pallet Truck on the market. Designed to answer the majority of Pallet transportation problems, the 2,400 and 4,400 pound capacity Pallet Trucks are quality manufactured, extra-sturdy, yet lightweight.

- **SHORT WHEEL BASE**
- **EFFORTLESS OPERATION**
- **ACCURATE STEERING**
- **COMPACT**
- **3¼" LOWERED HEIGHT**
- **5" LIFT**

Models 20"-27" wide, 36"-42"-48" long
(Specify when ordering)

MODEL BT 24—2400 lb. Cap. ..... Price **$350.00**
MODEL BT 44—4400 lb. Cap. ..... Price **$395.00**

(Dealers Inquiries Invited)

WRITE—WIRE—PHONE

INDUSTRIAL HANDLING EQUIPMENT CO.

1225 W. Monroe Monroe 6-8554 Chicago 7, Ill.

Circle 160 on Reader Service Card for more information

Post Office Confers With Industry Committee

Representatives of material handling societies and associations receive initial briefing for mail handling study.

WITH an organizational meeting at the Post Office Department, Washington, D. C., the material handling industry's *Post Office Handling Advisory Committee* has been activated.

The meeting was called for June 26 by Clyde W. Gray, Director of the Office of Research and Engineering, Post Office Department. It followed the offer by FLOW, wired to the Postmaster General on April 16, that this magazine help, in any way that might be possible, to solve the material handling problems of the post office.

FLOW staff personnel met with officials of the Post Office Department on May 3 to discuss how it might be possible for those in material handling to lend their knowledge and assistance to mail handling operations. It was decided that a representative "central committee" should include members of the American Material Handling Society; The Society of Industrial Packaging and Material Handling Engineers; The Material Handling Institute; Bernard Gordon, Jr., Publishing Director of FLOW; and Edward Leighten, Editor of FLOW. Later, the Conveyor Equipment Manufacturers Association volunteered its services.

The committee invited to Washington for the briefing meeting included the following:

William E. Kappler, Chief Conservation Engineer, North American Aviation, Inc., Los Angeles; Herbert Goldstein, Plant Engineer, L. Sonnenborn Sons, Inc., Belleville, N. J.; Charles L. McCamey, General Supt., Planning & Control, Cleveland Illuminating Co., Cleveland; George Raymond, Jr., President, The Raymond Corp., Greene, N. Y.; L. West Shea, Managing Director, Hanson & Shea, Inc., Pittsburgh; John W. McReynolds, Supervisor of Material Handling, Kraft Foods Co., Chicago; W. W. DeWitt, Material Control Area Supervisor, Rohm and Haas Co., Bristol, Pa.; L. J. Johnson, General Sales Manager, Mathews Conveyer Co., Ellwood City, Pa.; A. W. Dixon, Specialized Sales Engineer, Alvey-Ferguson Co., Cincinnati.

with PALITON work easy
HYDRAULIC LIFT TRUCKS
Heavy Pallet Loads move faster
STANDARD CAPACITY
4,600 lbs
Three strokes lift pallet free of floor.
BRIEFLY—THE BEST IN THE WORLD USED EXCLUSIVELY IN ROLLS ROYCE PLANTS
X 6,000 lb. test Hydraulic Unit
X Auto Safety Relief Valve
X Instantly replaceable cartridge valves
X Lifting height 5 inches
X Grease gun lubrication throughout
X Roller bearings throughout and extra strong lightweight construction makes work easy
90 day guarantee every truck.
Made in U.S.A. by COLES CRANES INC. P. O. Box 942, JOLIET, ILL. and available all dealers
Made in England by OMIC LIMITED, LONDON
In Canada from ELECTRO HYDRAULICS (CANADA) LIMITED 18 Ingram Drive, Toronto 9.
Circle No. 93 on Reader Service Card for more information

CLASSIFIED ADVERTISING SECTION

USED EQUIPMENT—MEN—JOBS—LINES

Rates: for "Positions Wanted" $8.00 minimum, limit 25 words. For all other classifications $10.00 minimum for 25 words; each additional word 25c. Boldface type or all caps, $12.00 minimum for 25 words, each additional word 35c. Box address counts as five words. All insertions payable in advance.

FOR SALE

USED EQUIPMENT
Hough Payloaders

We offer for immediate delivery H A Payloaders priced from $500 each. Have about ten available. Edward Ehrbar, Inc. 29 Meserole Avenue, Brooklyn 22, N. Y.; Evergreen 3-5000.

HYDRAULIC PLATFORM LIFT

Twin Post Lift in original crate, 10,000 lb. capacity, platform 8'10" by 10'. Raises 5' above floor level. Equipped for use with 10 H.P. electric motor. Reasonably priced. Dow & Co., Inc., 1820 Elmwood Ave., Buffalo 7, N. Y.

WANTED TO BUY

Hyster fork lifts with pneumatic tires, any condition. Fulton Equipment Co., 2235 Stewart Ave., S.W. Atlanta 15, Ga. Telephone PO. 7-8606.

REPRESENTATIVES WANTED

To handle line of engineered conveyors. Established manufacturer introducing line of unusual conveyors. Leads furnished. Exclusive territory. Commission. Write today. FLOW Box 7257.

An established manufacturer of quality two wheel hand trucks needs an additional manufacturer's agent presently calling on materials handling firms. Commission. Write c/o FLOW, Box 7157.

AGENTS WANTED!

To represent one of America's leading steel equipment manufacturers of: Add-A-Tier steel shelving, parts bins, hand and platform trucks, shop equipment. Most territories open. Submit full information. Write President, Bernard Franklin Corp., 2900 E. Hedley St., Phila. 37, Pa.

POSITION WANTED

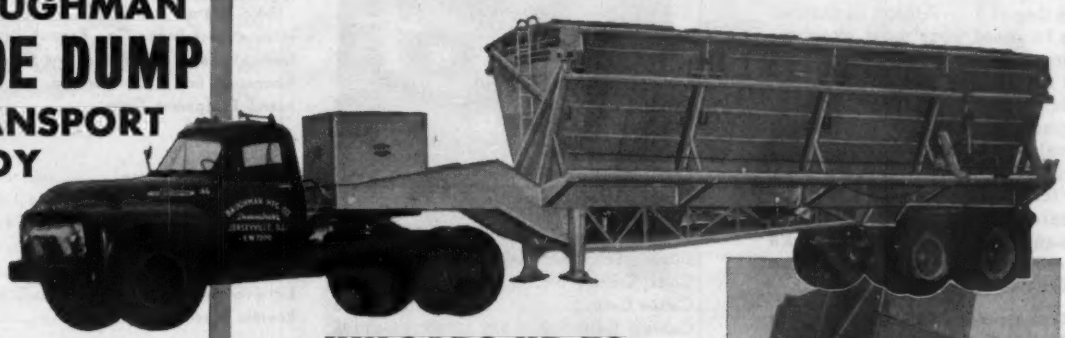
High class, mature conveyor sales engineer. No. degree, 15 years all phases bulk package, gravity, etc. Sales correspondent, drafting and layout ability. Available July. Write c/o FLOW Box 7457.

HELP WANTED

SALES AGENT WANTED

If you are a free lance sales agent selling materials handling equipment to New Jersey accounts then here is a real opportunity. We will furnish you with an office in Elizabeth, New Jersey, warehouse space and telephone answering service at no charge to you. In addition, we will give you actual leads for New Jersey on REBUILT AND GUARANTEED Fork Lift Trucks. You will also be able to represent us to your own clients and prospects. We have one of the nation's largest stocks and you are assured of our close cooperation on rentals, sales and service. Commission basis. Write fully in strictest confidence to President. Write c/o FLOW, Box 7357.

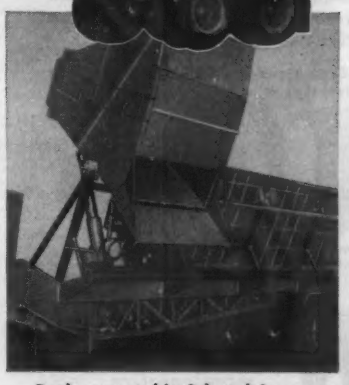
BAUGHMAN
SIDE DUMP
TRANSPORT
BODY



- ***INDIVIDUAL BUCKETS*** *... raised, lowered by hydraulic rams.*
- ***PTO OR AUXILIARY ENGINE DRIVES*** *for Hydraulic System.*
- ***UNLOADS INTO*** *Truck-Mounted Spreader Bodies, Portable Concrete Mixers, many other uses.*

UNLOADS UP TO 6 TONS IN 30 SECONDS!

Really fast, efficient material handling! Rams, mounted on monorail, are easily positioned under desired bucket by winch. Each bucket (with capacity from 1 to 6 tons, depending on material) can be lifted and discharged in half a minute! Available with lid (optional) which opens out to become discharge chute. (See inset). Bodies made of welded steel or with portions fabricated of aluminum or magnesium for larger payloads.



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BAUGHMAN MANUFACTURING CO.

106 ARCH STREET • JERSEYVILLE, ILL.

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AS GOOD AS THEY LOOK

ALBION CASTERS

You can depend on Albion Industrial Casters to meet your most exacting requirements for rugged, dependable service for the years to come.

Available in hundreds of types, sizes and capacities . . . a caster for every conceivable type of operation—floor protection or loading requirement.

Then too, Albion casters are more economical. Why not investigate their many advantages and make Albion your one dependable source for better casters.

Albion offers a broader selection of special casters in any size, type or capacity to fit your needs.

V-Groove Casters | Dual or Triple Wheel Casters | Pipe Base Casters

Contact your nearest Albion representative or write direct—

ALBION INDUSTRIES, Inc.
ALBION, MICHIGAN

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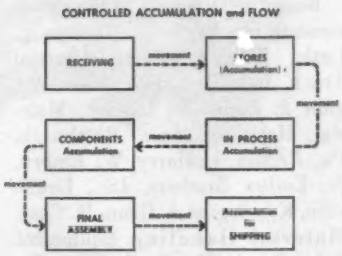
New Ideas IN MATERIALS HANDLING

A REPORT ON DEVELOPMENTS IN THE INTEGRATION OF — MOVEMENT — TRANSFER — ACCUMULATION *CONTROL

** in this issue "Control"*

New handling system has "mechanical brains" to control movement and lower costs

The general concept of the robot has been applied to materials handling in the form of mechanical "brain" controls that give handling systems the ability to make simple decisions. New Rapistan controlled flow systems use these "brains" to coordinate the movement, transfer and accumulation of material under a master plan that transforms floor space into "flow" space.



These systems are based on a new concept. It's one of "controlled accumulation," confined to your absolute necessities in production and temporary storage in plant areas at point of use.

Unique but low cost control devices, combining spur lines, electric eyes, and mechanical accumulators drastically cut your inventory investment by reducing work-in-process. Waste motion is minimized, and judgment errors are eliminated.

This kind of system in your plant automatically moves inventory-in-process to "mobilized storage" in minimum quantities needed to a working area.

Movement of materials is on a first-in first-out basis. Available plant space is used to the nth cube degree . . . even increasing storage capacity as much as 250% and possibly eliminating the need for expensive plant additions.

This is the controlled flow approach to materials handling as practiced by Rapistan idea men. It's a unique approach that assures you lower cost handling than ever before possible.

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Materials Handling Ideas

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MHEDA Names Officers for 1957-58

THE Material Handling Equipment Distributors Association has named C. C. Haddrell its president for 1957-58. Haddrell is with the firm of Lee H. Long Associates, Inc., Wellesley Hills, Mass. Elected with him as executive vice president is A. R. Canfield, M. E. Canfield Co., Los Angeles, Calif. Vice president is Harold W. Wiese, Wiese Planning & Engineering, Inc., St. Louis, Mo. Albert H. Bode, The Bode-Finn Co., Cincinnati, Ohio, becomes treasurer.

Board of Directors of the group consists of: *Region* 1. Horace E. Little, New England Industrial Truck, Inc., Brookline, Mass. *Region* 2. Louis W. Linsley, Material Handling, Inc., Pittsburgh, Pa. *Region* 3. Harry W. Embry, Jr. Embry Brothers, Inc., Louisville, Ky. *Region* 4. Glenn R. Case, Material Handling Equipment Sales Corp., Cleveland, Ohio. *Region* 5. O. S. Wilson, Wisconsin Industrial Truck Company, Inc., Milwaukee, Wis. *Region* 6. W. T. Scott, The G. W. Van Keppel Company, Kansas City, Mo. The advisory board includes William W. Oliver, Lift Truck Sales & Service, Kansas City, Mo., and Robert H. Braun, Robert H. Braun Co., Los Angeles, Calif.

NEW OFFICERS of Material Handling Equipment Distributors Association are (left to right): A. R. Canfield, executive vice president; C. C. Haddrell, president; H. W. Wiese, vice president. A. H. Bode, treasurer, is not shown.

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THAT SOLVES TROUBLESOME BULK HANDLING PROBLEMS:

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Tubular and Pivoted Bucket Conveyors

Hapman Tubular Conveyors move almost any bulk material—wet or dry—through any plane or angle. They're dust, liquid and odor-tight. Investigate!
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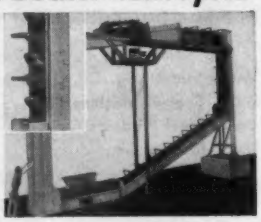

Exclusive top loading device on Pivoted Bucket Carrier handles fragile materials gently. Many other unique advantages.
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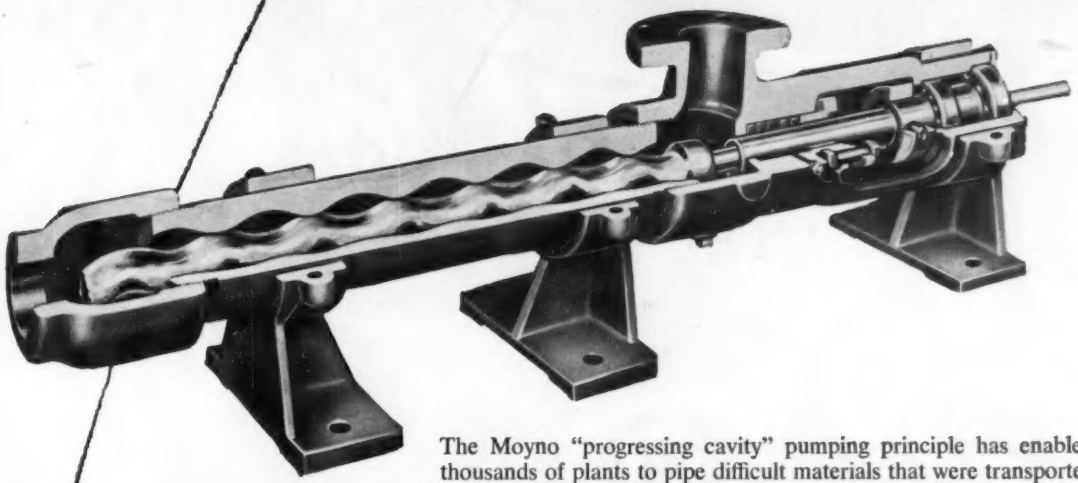
from abrasive slurries to delicate foods . . .

MOYNO® PUMPS

CUT HANDLING COSTS



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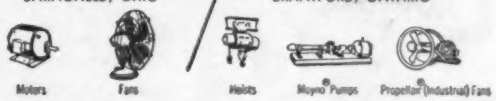

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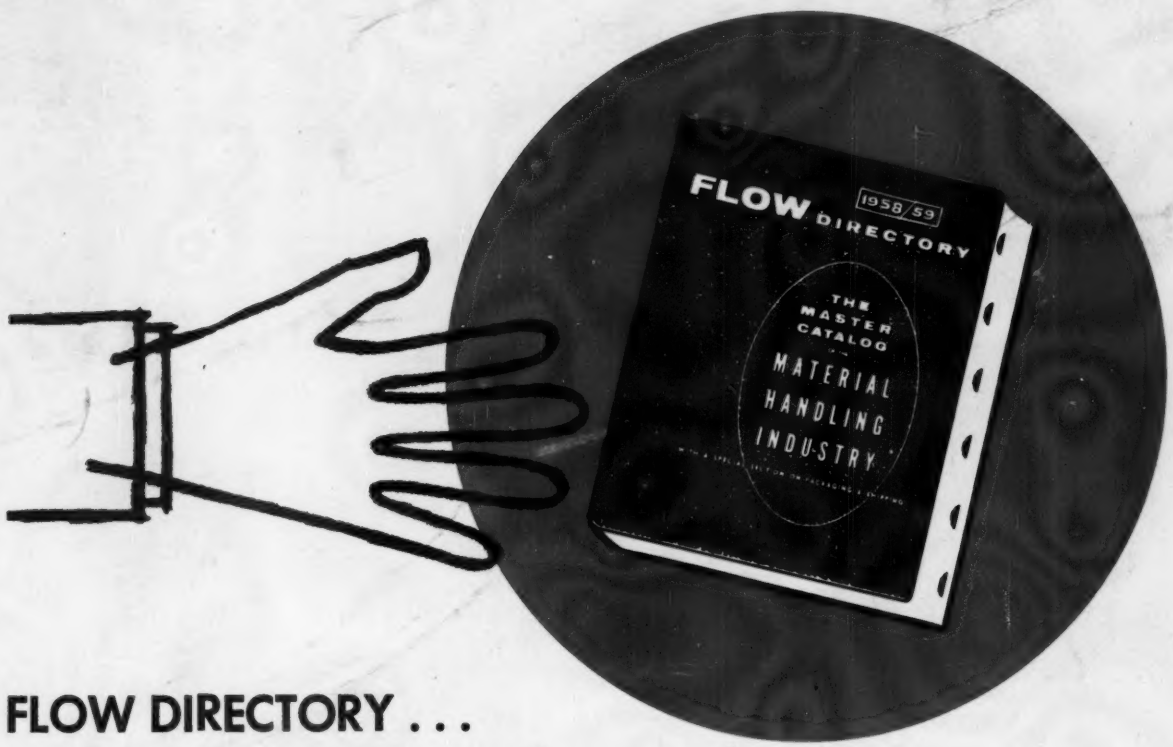

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